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The Effect of the "National Health Insurance Family Doctors Integrated Care" Program on Patients' Health Care Utilization

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Objectives: In 2003, Bureau of National Health Insurance (NHI) launched a "Family Doctors Integrated Care Plan" (FDICP) program to implement the health care referring system, promote health, and control the health care resources. The purpose of this study was to evaluate the effect of FDICP program on members' health care utilization.

Methods: We adopted the NHI claim data from 2004 to 2006. Patients who joined FDICP for consecutive three years were recruited as the intervention group and those who never joined as the comparison group. By adjusting the propensity score, we controlled the selection bias due to the demographic discrepancies. The effectiveness of the FDICP program was evaluated by comparing the utilization of prevention services, medical care services, and health care expenditures between these two groups. **Results:** Our results showed that the intervention group received significantly higher adult prevention services; however no significant difference was found on the children prevention services and Pap smear rates. In terms of outpatient utilization and expenditure, the intervention group was significantly higher than that of the comparison group. However, the results showed opposite direction in terms of hospitalization rates, length of stay, and admission expenditures. Finally, the FDICP program did not increase total health care expenditure.

Conclusions and Suggestions: The study shows that FDICP program is effective in promoting health care prevention and controlling hospitalization. We suggest that it is necessary to evaluate the long term effect on health care utilization and expenditure of the FDICP program.

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The Research of Off-Labeled Drug Use and Medication Type for Child Antibiotics under National Health Insurance in Taiwan

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Background: In Taiwan, antibiotics abuse has caused serious problems, such as drug resistance, and the child prescriptions have written out easily. Therefore, the study is focusing on medication type and off-labeled

drug use that child antibiotics in pediatric outpatient services, and discussing the effective factors.

Method: All of data was extracted of systematic sampling datasets and contracted pharmacies files from the database of National Health Research Institutes from 2002 to 2005. This object of study patients are under 12 years old. The medication types are including expenses, medication items, medication categories, and administration duration. In addition to the off-labeled drug use, there are the further analysis of duplicated medication and drug-drug interaction.

Result: The prescriptions are 66,446 with antibiotics. The average of medications is 5.06 items per prescription with 1.03 items for antibiotics. The average of antibiotics medication is 1.02 categories. By the way, the average charge of medications has been cost NT\$109.52 with NT\$41.38 for antibiotics. The average duration of administration is 3.25 days. Off-labeled drug use is 33.33%; within the single prescription the rate of drug-drug interaction is 0.5%, and the rate of duplicated medication is 1%. The medication type and inappropriate prescription are different with prescription types, patient characters, doctor characters, and hospital characters. **Conclusion:** The rate of child off-labeled drug use is too high in this research; therefore, the further study is necessary. And even though the rate of duplicated medication and drug-drug interaction are not high, but they are still risks of child medication security.

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Effect of Drug-Ceiling Policy on Physician Behavior: Example of Diabetic Medication in Taiwan

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Objective: The Bureau of National Health Insurance (BNHI) has shifted the responsibility of cost containment on drug expenditures from patient level to provider level by setting up a ceiling policy for medication. The aim of study is intended to examine impacts of medication ceiling policy on physician prescribing behaviors for diabetic medication and compare the trends of utilization for branded and generic drugs of Sulfonlureas.

Methods: Retrospective secondary analysis based on a random sample of the NHI claims data from 2000 to 2005. All the prescription orders of Sulfonylureas for inpatients and outpatients at different levels of providers were included. The utilization for medications before and after the implementation of policy was analyzed.

Results: Before the policy intervention year of 2005, both branded and generic drugs increased from 2000 to 2004. However, the utilization of branded-drug decreased significantly in quantity (-9.72%) and in expenditures (-8.42%) after the policy. On the other hand, the results of trend test indicated that the use of generic drugs had a significantly increasing trend ($P < 0.05$) at utilization and expenditure. The changing trends of

prescribing branded and generic drug were varied by different levels of hospitals.

Implications: Physician prescription patterns are affected by the BNHI drug-ceiling policy. Hospitals may change hospital drug formulary by replacing branded-drug with generic drug so that the impact of drug policy will be minimized. However, the quality of diabetic medication needs further cost effectiveness analysis.

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Exploration of Health Service Utilization by Diabetes Patients with Lower Extremity Amputation: A Longitudinal Study

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Diabetes mellitus can cause devastating complications including heart disease, blindness, kidney failure and gangrene in the leg and foot leading to amputation. This study aims to analyze health care expenditure and utilization of lower extremity amputation among patients with diabetes from claim data of Taiwanese National Health Insurance. Data from the National Health Insurance Academic database from 2000 to 2006 identified 16943 admissions for procedure by applying the definition of one of Ambulatory Care Sensitive Hospitalization to select cases. The total admissions are attributed to 4644 patients. The result shows approximately 2420 procedures performed each year. The mean age at the time receiving procedure is 67 years old. The mean age of male is lower than female age. 56% of patients are male. The estimated expenditure and average number of total hospital days each year is around 330 million and 62134 days respectively. The average expenditure and average length of stay per admission is 136058 NT dollars and 24.45 days respectively. The trend of number of procedures performed every month from 2000 to 2006 shows a seasonal variation. The peak number of procedure reaches highest from April to May every year. However, there is significant decrease in total number of procedure in 2006, even though the trend still emerge seasonal variation. The utilization of hospitalization for lower-extremity amputation among patients with diabetes may be preventable through efforts on disease management. The study findings provide descriptive information of the preventable hospitalization for the purpose of policy making.

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Prevalence of Knee Osteoarthritis among Adults Aged >50 Years in the District of Colombo

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Introduction: Data on prevalence of osteoarthritis (OA) derived from symptoms and signs are sparse with minimal information from developing countries.

Objective: To determine the prevalence of knee OA among adults aged >50 years in the district of Colombo.

Methodology: cross sectional study was conducted among 1750 adults >50 years using two stage stratified cluster sampling technique with probability proportionate to the size of the population in Colombo district. The interviewer administered Knee Osteoarthritis Diagnosis Instrument - Sinhala which was developed and validated from the American College Rheumatism clinical criteria, was used to diagnose knee OA.

Results: Crude prevalence of knee OA for Colombo district was 11.9% (95%CI:10.4-13.5) while the age & sex standardized prevalence was 11.3% (95%CI:11.2-11.4).

Sex specific prevalence rates of knee OA among males and females were 6% (95%CI:4.4-7.8) and 16.9% (95%CI:14.5-19.4). Females were at statistically significant 3.2 times higher risk compared to males (95%CI:2.3-4.5, $p < 0.000$).

After adjustments for confounding with conditional logistic regression, persons with monthly income of $\geq$ Rs2001 (OR=2.4, 95%CI:1.2-4.8, $p = 0.013$) and who are engaged in highly active jobs were at (OR=5.9, 95%CI:2.1-15.9, $p < 0.00$) higher risk of knee OA.

Conclusion: Prevalence was significantly higher among females, older age, high income group and highly active jobs.

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An Evaluation of an NCD Risk Reduction Intervention in Selected Villages

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Objective: To evaluate an NCD risk reduction intervention implemented at village level by a team of volunteers from the village.

Methods: The intervention was conducted in 40 randomly selected villages in seven districts and comprised Behavioural Change Communication sessions on reducing risk behaviour for NCD and creating an enabling environment for healthy life styles. Pre-post design, one year apart, was used. An interim assessment was also conducted. Outcomes assessed were changes in relevant knowledge, attitudes and practices at household level in a sample of households ($n = 1200$) selected from 4-5 villages from each district. Adult female head of the family was selected as the informant. Data collectors were trained prior to each assessment and training included a practice data collection session in the field. Four supervisors were present in the field, supervising selection of households and data collection