PHP67

COST ANALYSIS OF HOME-BASED MEDICATION REVIEWS IN A MULTI-ETHNIC ASIAN POPULATION: A PILOT STUDY

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OBJECTIVES: To evaluate the feasibility and cost of conducting home-based medication reviews (HBMR) among community-dwelling multi-ethnic Singaporeans and permanent residents. **METHODS:** In this cross-sectional study, Chinese, Malay and Indian aged 40 and over and on at least 5 medications were referred by their general practitioners (GPs) for HBMR. Patients completed a survey on sociodemographic and clinical information. Pharmacists' time spent on HBMR and preparing visit reports were captured and assigned a cost based on pharmacists' average hourly wages. Drug related problems (DRP) were evaluated using the Westerlund DRP classification system, reported to and followed up with the GPs. **RESULTS:** Of 14 participants referred, 9 consented (64.3%; 6 women; 6 Chinese, 2 Malays, 1 Indian; mean (SD, range) age: 69.3 (10.6, 52 – 86 years). Seven out of the 9 patient were under the care of at least two physicians. Dyslipidemia, hypertension and diabetes are the main condition affecting the participants (100%, 88.9%, 66.7%, respectively). A total of 12 DRP were detected: underuse of medication (n=7, of which 2 were due to non-compliance), overuse of medication (n=1), incorrect timing (n=2) and therapy failure (n=2). Pharmacists spent an average 3.5 hours per home visit. Total programme cost was $787.5 (9 visits x $25/hr x 3.5hr/ visit). Hence, cost per DRP detected was estimated at $65.63. One of the DRP detected was vertigo without treatment. Hence, programme cost may be potentially offset by the savings from avoiding an episode of hospitalization due to fall. **CONCLUSIONS:** DRP is prevalent and potentially preventable but were undetected in this primary care sample. Hence, there is a role for HBMR. We are currently conducting a longitudinal randomized controlled trial to evaluate the cost-effectiveness of providing and not providing HBMR by collecting direct and indirect costs, health services utilization and health-related quality of life outcomes at baseline and 6-months.

PHP69

FACTORS MAY INFLUENCE PATTERN OF MEDICINE'S USE

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OBJECTIVES: Pharmacists have a remarkable role in rational use of drug by presentation of drug information as patient educator, explanation, assessment and performance of drug orders, contribution in drug selection and utilization as physician consultant, drug utilization review and participation in patient outcomes in ambulatory settings.The aim of this study is to evaluate pharmacists' opinion about the factors affecting rational drug use. **METHODS:** In a cross sectional survey, questionnaires of the study were completed in Convenient Sampling by pharmacists who had been attended in rational use of drug congress in Tehran. **RESULTS:** A total of 147 pharmacists were enrolled to the study and the highest priorities in irrational use of drug by pharmacists were revealed including 39% lack of appropriate cooperation and communication between physicians and pharmacists, 34% pharmacists' low tariff and economic issues, 45% lack of public knowledge about drug use and 15.8% lack of regulations. **CONCLUSIONS:** Lack of public knowledge and awareness about appropriate use of medicines was found the most important factor in promoting irrationality in drug use. Dissemination of rational use of drug ideas, compiling of diverse strategies in education, management, regulation and finance can be very efficient due to a strong relationship between drug policies and performance of regulations and supervisions as well as drug services methods.

PHP70

A 3-YEAR FOLLOW-UP STUDY ON NATIONAL HEALTH INSURANCE REIMBURSEMENTS AMONG ATRIAL FIBRILLATION PATIENTS WITH/WITHOUT STROKE IN TAIWAN: A POPULATION-BASED STUDY

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OBJECTIVES: To evaluate the 3-year National Health Insurance reimbursements among atrial fibrillation (AF) patients with and without stroke in one year in Taiwan. **METHODS:** The data were retrieved from the Taiwan Longitudinal Health Insurance Database, which consists 1,000,000 Taiwanese people's claimed data from 2005 to 2008. The study cohort consisted of 17,427 patients with newly diagnosed AF in 2005 and 537 occurred stroke in 2006. Each patient was individually followed-up for 3 years period from 2006 to 2008. The generalized linear model (GLZM) was used to estimate the health care reimbursements and the risk to hospitalize among AF patients. **RESULTS:** The estimated incidence rate of atrial fibrillation was 1.74% per person year. Besides, among AF patients, the estimated incidence of stroke was 3.08% per person year. After adjusting for age and sex, AF patients with stroke had statistically significant higher outpatient reimbursement (NTD$44, 941 vs 38,078/person-year) and inpatient reimbursement (NTD$ 1,630,222 vs. 960,702/person-year) than AF patients without stroke. Also, the results of GLZM revealed a statistically significant hazard ratio to be hospitalized in AF patients with stroke (HR=1.93; 95% CI=1.73-2.15, p-value<0.001). AF patients with stroke, however, did not have statistically significant difference of annual outpatient visits from AF patients without stroke (33 vs 32 times/person-year). **CONCLUSIONS:** This study demonstrated that AF patients with stroke were found to utilize significantly more national health insurance reimbursements than AF-alone patients and also to be at a significant higher risk of hospitalization during a 3-year follow-up period after diagnosis.

PHP72

MAKING MONEY WORK FOR IMPROVEMENT OF PATIENT CARE: SUCCESS AND SHORTCOMINGS OF PAY-FOR-PERFORMANCE PROGRAM IN TAIWAN

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OBJECTIVES: Pay-for-Performance (P4P) program was introduced in Taiwan in 2001 for treatment of breast cancer (BC), diabetes mellitus (DM), tuberculosis (TB), asthma, and cervical cancer. Although P4P is increasingly being implemented, there remains insufficient evidence to support the belief that the P4P incentive design improved the outcomes of care. **METHODS:** Embase® and MEDLINE® were searched from 2001-2012 using the key terms "pay-for-performance" and "P4P" for studies published in English. **RESULTS:** Of the 1413 screened, 14 studies assessing P4P program in Taiwan were identified. Studies assessing P4P in patients with asthma and cervical cancer were not retrieved. The BC-P4P enrolees received better quality care (p=0.001), resulting in better 5-year overall survival (odds ratio [OR]: 5.99; p=0.003) and less recurrence (OR: 2.70; p=0.002) when compared to non-enrolees. The effect was more pronounced in low-volume hospitals (OR: 1.38; [95%CI: 1.08 - 1.77]) and non-medical centres (OR: 1.62; [95%CI: 1.24 - 2.11]). Among TB-P4P enrolees, cure rate within 12 months of treatment significantly increased (OR, 1.338; [95%CI: 1.159 - 1.544]), whereas default rate from treatment significantly decreased (OR, 0.904; [95%CI: 0.702 - 0.973]) compared to non-P4P enrolees. In DM-P4P enrolees, the cost of diabetes-related physician visits was higher (5731 NT$/patient), however, costs of diabetes-related hospitalisations (-5099 NT$/patient) and overall expenditures on health services (-10 543 NT$/patient) were considerably lower compared to non-enrolees. Hospitals in cities with low-income levels were more likely to participate in P4P programs compared to hospitals in high-income level cities (OR: 4.53; [95%CI: 2.87 - 7.16]). The results illustrated that older patients and patients with high co-morbidity/severity were prone to be excluded from P4P programs. **CONCLUSIONS:** Patients enrolled in the P4P program received a better quality of care and demonstrated better outcomes than the non-enrolled patients. However, benefit of P4P can be extended by including older patients and those with higher disease severity and co-morbidities.

PHP74

SUBMISSION OF NEW DRUG REIMBURSEMENT AND PRICING APPLICATIONS TO NATIONAL HEALTH INSURANCE (NHI) OF TAIWAN, MEETING OUTCOMES OF THE DRUG BENEFIT COMMITTEE

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OBJECTIVES: The Drug Benefit Committee (DBC) appraises the value of new drug and categorises it as class 1 (substantial improvement), 2A (moderate improvement) or 2B (similar) according to relative treatment effect of new drug compared with the exiting treatment(s), and pricing method link to the category is decided. When DBC considers more information is required the application will be further discussed in extension meeting, and appeal could be entered if the license holder did not agree upon the result. We analyzed the features of new drug applications and corresponding DBC meeting outcomes in 2007 and 2008. **METHODS:** Data were abstracted from the applications and DBC meeting minute. **RESULTS:** There were 82 applications during the study period, 51 were submitted by the multinational companies and 31 by domestic companies; 6 applied for class 1; and 70 were single-compound. By end of 2008, 63 (77%) were reimbursed; for the unreimbursed, 7 were withdrawn by the applicants and 12 were denied by the DBC. 20 new drugs received unconditional recommendation, 43 with conditional coverage. 31 (38%) submissions entered appeals, 22 for price and 9 for reimbursement decision. Appealed successfully in 22 (71%), but double the duration to reach final result. The final reimbursed prices were 81% to 91% of the applied price in class 1, and 55% to 73% in class 2. The feature of company (foreign or domestic) and the ratio of applied to the first DBC decided price had influence on the decision of company to enter an appeal. **CONCLUSIONS:** The reimbursement and price process is evolving continuously. How to justify the value of treatment to the community, scientific sound methods for assessment and appraisal, and transparency of the process and outcomes are the important considerations. The cumulative experience is valuable for future improvement.

PHP76

EVIDENCE REQUIREMENTS FOR PRICING AND REIMBURSEMENT DECISION MAKING FOR ORPHAN DRUGS IN ASIA

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OBJECTIVES: Due to high unmet needs and low prevalence, orphan drugs can be approved by regulatory authorities based on evidence demonstrated through single-arm study designs; indeed, randomized studies in rare diseases may not be feasible. As part of a health technology assessment (HTA) evidence package, however, value demonstration through comparison to existing therapies or supportive care is always required. This study aimed to explore the value perceived by reimbursement authorities for an orphan therapy in a single-arm trial evidence package, and to understand any supplementary evidence requirements for value demonstration. **METHODS:** Fourteen experts in HTA, pricing and reimbursement (P&R) decison makers, and influencers in China, South Korea, Taiwan, and Thailand were recruited and interviewed, following a comprehensive discussion guide. The responses were further analysed to identify the key challenges in value demonstration and what clinical and economic evidence the respondents found acceptable in evaluating orphan drugs. **RESULTS:** In all countries, payers valued innovative therapies for rare diseases and were understanding towards limitations