

data consist, amongst others, of Diagnostic Related Groups (DRG), severity of illness, risk of mortality, number of procedures and comorbidity. Regression analysis was used to estimate the impact of these pathology-related parameters on the use of resources for medical imaging. **RESULTS:** All pathology-related parameters have a statistically significant impact on the consumption of medical imaging. Fifty-seven and three-tenths percent of the case wise variation in utilisation of resources can be explained by the different parameters. However, the interaction of DRG with the severity of illness in itself explains 46.7% of this variation. **CONCLUSIONS:** Pathology-related parameters, especially the interaction of DRG with the severity of illness, can be used to determine a lump sum fee that could partly (+/-50%) replace the in essence fee for service based payment system currently in practice.

PHP16**GENERIC DRUG PRICES ARE TYPICALLY HIGHER IN CANADA THAN IN THE UNITED STATES**

Palmer WN, D'Angelo J

Palmer D'Angelo Consulting Inc, Ottawa, ON, Canada

OBJECTIVE: This paper compares the prices of top selling generic drugs in Canada with prices for comparable generic products in the United States. **METHODS:** The research examined the prices of 27 top selling (in 2001) generic prescription medicines in Canada that were marketed in both Canada and the United States. The sample represented approximately 36% of total generic sales in Canada. For each of the generic medicines a representative presentation (strength/dosage form) was selected—generally the top selling presentation of the medicine. The prices were the Q1 2002 Canadian ex-factory prices as listed in the Québec provincial government formulary and the US Federal Supply Schedule (FSS) prices. These prices generally represent the best available prices in the two countries. **RESULTS:** Preliminary results indicate that of the 27 leading generic drug products examined, 21 had higher prices in Canada than in the U.S. By all measures Canadian generic prices of the sample drugs were higher than those in the U.S.: Mean: +155%; Weighted Mean: +37%; Median +51%. Annual savings in excess of C\$150 million would result if Canadians had access to FSS prices for the sample drugs. If the price differences seen in the sample can be extrapolated to all generic drugs available in Canada, the potential annual savings would exceed C\$400 million. **CONCLUSIONS:** It is generally accepted that the ex-factory prices of innovator (brand name) prescription drugs are significantly lower in Canada than in the United States. It was therefore surprising to find the opposite result for generic drugs. Several factors may contribute to higher Canadian generic prices. The Canadian generic industry is highly concentrated (relative to the US) with the market dominated by two large generics firms. Sec-

ondly, provincial government reimbursement policies discourage discounting and feature published formularies that typically establish ex-factory prices for all classes of customer.

PHP17**SPANISH NATIONAL HEALTH SERVICE (NHS): PHARMACEUTICAL CONSUMPTION AND ESTIMATION OF THE SAVING WITH GENERIC DRUG PRESCRIPTIONS**

Gaspar D, Mariño E

University of Barcelona, Barcelona, Spain

OBJECTIVES: Spanish Health Administration has developed some regulatory actions to check the growth of drugs expenditure. Specifically, in 1999, Government approved a reference price system for many drug groups (homogeneous). Here, we present the initial data from a study of drug consumption and a estimation of the saving with the prescriptions of generic drugs. **METHODS:** This study was divided into 2 periods: 1990–1998 and 1999–2002. In the second, the influence of the reference price system implementation will be observed. Data from Spanish NHS about drug consumption were provided by the Ministry of Health and Consumer Affairs. We elaborated our own database. Consumption was expressed as PVP (price for sale direct to customer, tax-free) by means of PTAM (Peseta Millions) or €M (Euro Millions), and was revised through CPI (Consumption Price Indexes, Base 1990). Information about PVP drugs was obtained from Official Drug Directory. DID (Dose for thousand inhabitants and for day) was also calculated according to DDD's standard—Nordic Council Medicines ATC/DDD, edition 1998. Saving estimation was calculated through PVP minimum criteria of prescription, since the reference price system had not been implemented yet. **RESULTS:** According to consumption data obtained, in 1998, top four therapeutic groups—29 active principles—explained almost 34% of the whole expense—286116.2 PTAM or 2458.33 €M. Besides, if the criterion of PVP minimum was applied, for the most usual format (package) per prescription, the average saving would be almost 7%. In the Spanish pharmaceutical market there are many prices for specific active principles, being possible to identify the biggest individual saving. **CONCLUSIONS:** Almost the third part of NHS pharmaceutical budget in 1998 was assigned at 29 active principles. The level of individual saving was significant in omeprazole (44%) or famotidine (40%), among others.

PHP18**ESTIMATING THE ECONOMIC BURDEN OF HOSPITALIZATION DUE TO PATIENT NONADHERENCE IN CANADA**Iskedjian M¹, Addis A², Einarson T³

¹Pharmideas Research and Consulting Inc, Oakville, ON, Canada; ²Centro per la Valutazione della Efficacia della Assistenza Sanitaria, Modena, Italy; ³University of Toronto, Toronto, ON, Canada

Nonadherence (noncompliance) to drug therapy can result in increased rates of relapse, morbidity, and mortality. Its overall economic impact has been estimated at \$8 billion annually in Canada, and \$80 billion in the US, including both direct and indirect costs. **OBJECTIVES:** The purpose of this study was to estimate the economic burden of hospital admissions due to patient nonadherence in Canada from the viewpoint of the provincial ministries of health. **METHODS:** We estimated the overall burden in two steps, using a modeling approach. First, we estimated the impact of nonadherence on hospital admissions. We performed a random-effects meta-analysis of the published literature to derive an average rate of hospital admissions due to nonadherence. We then quantified the resources in monetary terms in Canadian dollars (CAD). We used utilization and costing data from Statistics Canada on hospitalizations. Various sensitivity analyses were performed with different costing sources for hospitalizations, such as the Ontario Case Cost Project and the Ontario Hospital Statistics. **RESULTS:** We included 15 studies on nonadherence related hospital admissions, with a total of 6,144 subjects, to derive an overall meta-analytic average admission rate of 5.4% (SE = 0.8%), and 5.2% (SE = 1.1%) for medication underuse. Applying an average length of stay of 10 days for 10,272 hospital separations per 100,000 population in Canada, we estimated the 5.4% assumed to be due to nonadherence to amount to CAD \$1,018 million annually. Sensitivity analysis results ranged from CAD \$678 million to CAD \$1,633 million annually. **CONCLUSION:** Our results illustrate the extent of the economic burden of hospitalization due to nonadherence in Canada. Further studies are warranted for estimating overall resource use and productivity loss due to nonadherence.

PHPI9**HEALTH EXPENDITURE FOR THE DURATION OF LAST YEAR OF LIFE IN TAIWAN**

Liang LY, Lan CF

National Yang-Ming University, Taipei, Taiwan

OBJECTIVE: The evidenced-based study tests the hypotheses (i) National Health Insurance Expenditure increases with closeness to death (ii) National Health Insurance Expenditure decreases with age. This study analysis age, sex and health expenditure differences before the day of death for one-year period during 1999 and 2000. **METHODS:** In Taiwan the National Health Insurance Program had covered 97% population. The claim data were obtained from Bureau of National Health Insurance (in 1999 and 2000), the vital registration data (in 2000) were from Department of Health in Taiwan. Use the vital registration ID number to merge the National Health Insurance Expenditure, then retrospect 1 day, 2–7 days, 8–14 days, 15–30 days, 31–60 days, 61–90 days, 91–180 days, 181–270 days, and 271–365 days before dying. **RESULTS:** The 22.1% dead people

had no medical expenditure in the last year of life. The expenditure of last year of life accounts for 12.8% of all National Health Insurance Expenditure, 2.6% of it on ambulatory care, (1.1% for female, 1.5% for male), and 10.3% of it on inpatient care (3.9% for female, 6.39% for male), respectively. The expenditure 91–180 days before death accounts for 18.1% (highest) total expenditure of the last year of life, the lowest is 1 day before death accounts for 2.3%. The total expenditure for the age groups 0–64, 65–84, and 85+ accounts for 36.5%, 54.2% and 9.3%, respectively. The total expenditure ascending with age from 27 years-old (0.11%) to 76 years-old (3.3%) then decreasing with each age. But the last year expenditure proportion to all year expenditure is ascending from 27 years old with age. The average expenditure is \$8,307 US dollars per decedents, 26.1 times for average expenditure for each person.

PHP20**HARMONIZATION OF HOSPITAL COSTS**Jacobs P¹, Finlayson G², Rapoport J³¹University of Alberta, Edmonton, AB, Canada; ²Manitoba Centre for Health Policy, Oak Park, IL, USA; ³Mount Holyoke College, South Hadley, MA, USA

OBJECTIVES: Guidelines for costing of health services recommend the use of costs of several providers in forming a variable used to measure unit cost. In the Canadian national list of provincial costs hospital costs were aggregated by all hospitals within each province and were compared between provinces. In this paper we validate the provincial cost measure, using data from Manitoba hospitals. **METHOD:** The conceptual measure for our analysis the Cost per Weighted case (CWC), which is equal to the total inpatient costs divided by total weighted cases. The actual (published) measure of CWC was not audited for standardization; it was compared with a revised measure, which was adjusted following an assessment exercise. The revised measure was based on the following standardization criteria: (1) the measure of total cost should include all relevant resources used and appropriately allocated and (2) weighted cases should reflect the year in which costs were measured. Adjustments were made using data from each hospital: inpatient costs were based on provincially reported costs according to a Management Information System (MIS) coding system and weighted cases were based on the Case Mix Group measure of the Canadian Institute for Health Information. **RESULTS:** Of the 38 hospitals reporting data, 7 (18%) reported a change in CWC of >10%, 16 reported an adjustment of <10%, and 15 reported no adjustment. The overall change in CWC was substantial: of those hospitals with confirmed data, the mean adjusted CWC was \$4538 compared with an adjusted value of \$2195. **CONCLUSIONS:** The large adjustment in CWC occurred in only a few hospitals, yet it substantially changed the overall CWC, which would serve as a standard value for economic studies. It is necessary to vali-