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TRENDS IN COMMUNITY BASED ADVERSE DRUG EVENTS IN THE UNITED STATES: 1996–2005

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OBJECTIVE: Despite 1999 Institute of Medicine report, which brought implications of adverse drug events (ADEs) in the US health care system in focus, the information on community based ADEs in the United States is still lacking. In this retrospective study we evaluate trends in occurrence, costs, and mortality due to community based ADE from 1996–2005. **METHODS:** Discharge level data from community hospitals across the United States included in National Inpatient Sample (NIS) data from the Healthcare Cost and Utilization Project (HCUP) was used. Records with principal diagnosis of ADEs were extracted using 378 different ICD-9 CM and external cause of injury (E-codes) codes assigned for diagnosis of ADEs. ADEs due to adverse effects of appropriately administered drugs and drug poisoning were included. Hospitalizations due to illicit drug use, intentional harm, or self-intended events of overdosing or drug poisoning were excluded from the analysis. **RESULTS:** There was an estimated increase of 16.7%, between 1999 and 2005, in the occurrence of ADEs as the primary diagnosis. Primary diagnosis of ADE was predominantly observed among whites compared to non-whites. Average age of people hospitalized with diagnosis of ADE increased from 36 years in 1996 to 40 years in 2005. Average duration of hospitalization between 2000 and 2005 was found to increase steadily. Average total charge towards hospitalization and care due to ADEs increased from \$6070.20 to \$14,223.37 over the 10 years study period. Among those with a primary diagnosis of ADE, there was an increase in mortality during inpatient stay, from 0.82% in 1996 to 0.99% in 2005. **CONCLUSION:** Our study suggests a steady increase in community based hospitalizations due to ADEs since 1996 indicating a direct impact on health care costs and utilization of health care resources.

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PREVALENCE OF CONDITIONS IN THE US EMPLOYER-INSURED POPULATIONHansen LG¹, Chang S², Foley K³¹Thomson Healthcare, Northwood, NH, USA, ²Thomson Healthcare, Washington, DC, USA, ³Thomson Healthcare, Philadelphia, PA, USA

OBJECTIVE: This study presents a methodology to estimate prevalence rates for specific diagnosed conditions among the ~170 million Americans covered by employer-sponsored insurance (ESI). Individuals with ESI represent over 58% of the United States population, a large group with fewer cost barriers to care. **METHODS:** Estimates were made from the 2006 MarketScan databases, which include all health care claims for approximately 17 million employees, dependents, and retirees with ESI. The Sample Select Prevalence tool identified patients diagnosed with asthma, osteoporosis, allergic rhinitis (AR), essential hypertension, rheumatoid arthritis (RA), type II diabetes, congestive heart failure (CHF), or hypercholesterolemia (using relevant ICD-9-CM diagnosis codes), and calculated prevalence rates. Weights were developed based on the Medical Expenditure Panel Survey (MEPS), a probability sample that estimates the number of Americans by health insurance type. The ratio of MEPS population estimate to MarketScan population within certain strata of demographic characteristics provided the projection weights. Prevalence rates were calculated for the total population and by age, gender, geographic region, and health plan type. **RESULTS:** Based on the 2006 MarketScan databases, annual rates per 100,000 were as follows: 12,101.63 (hypertension), 5,102.10 (type II diabetes), 4,648.86 (AR), 4,257.15 (hypercholester-

olemia), 3,015.54 (asthma), 947.14 (osteoporosis), 713.7 (CHF), 532.97 (RA). These rates varied by age, gender, and geography. Annual expenditures per patient in the convenience sample ranged from \$5,920 (AR) to \$36,615 (CHF). **CONCLUSION:** Reliable estimates of prevalence and costs for diagnosed health conditions are valuable to policy makers, providers, and payers. This study demonstrates a reliable projection methodology for estimating annual prevalence, treatment rates, and costs associated with a diagnosed disease or condition based on a large convenience sample of health care claims data.

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DEVELOPING A PRACTICE-BASED RESEARCH NETWORK (PBRN) TO EVALUATE MULTI-CENTER PHARMACIST-CONDUCTED MEDICATION THERAPY MANAGEMENT PROGRAMS (MTMPs) USING THE ECHO MODEL

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OBJECTIVES: MTMPs positively impact individual chronic diseases, but little is available on their impact on multiple chronic conditions using the Economic, Clinical, and Humanistic (ECHO) model. Merging community pharmacy practice and academic research to form a PBRN is a unique and innovative approach to assessing community-based patient outcomes. Authors will present a PBRN model developed and sustained for demonstrating MTMPs reduce costs and utilization, while improving humanistic and clinical outcomes. **METHODS:** Initiation to develop the multi-center PBRN began in 2005 with the goal to combine practice and research agendas for successful data mining and sustaining an ongoing practice-research environment. This led to a newly formed coalition of independent pharmacies followed by solicitation by several employer groups for providing MTMPs to their employees. An academically affiliated Outcomes Research Laboratory was assigned the research role. Currently, the PBRN has two completed and two new projects. Studies designed for the PBRN have used a prospective, pre-post longitudinal design for employees receiving MTMPs at one of the five coalition pharmacies. Program algorithms using evidence-based guidelines determine visit patterns. Adults with diabetes, hypertension, hyperlipidemia, or a combination of these diseases are enrolled through various incentive and marketing strategies. Outcomes data are obtained using claims, clinical laboratory tests, and patient self-reports. Measures are staggered at three month intervals and include: (1) costs and number of physician, ER, and hospital visits; length of stay, type of admission, and absenteeism; (2) HbA1c, self-monitoring of blood glucose, blood pressure, and total lipid panel; (3) patient satisfaction, quality of life (SF-36), and disease state knowledge (4) social history (5) HEDIS process measures. **CONCLUSION:** There is a paucity of PBRNs and lack of knowledge to develop and sustain one. Given the need to continually showcase outcomes achieved by pharmacist-based MTMPs, the presentation will focus on establishing and sustaining a PBRN.

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COMPARATIVE ANALYSIS OF THE ACCESS TO PHARMACEUTICALS IN SELECTED EAST EUROPEAN COUNTRIESLacic D¹, Tasic L², Petrova G³¹Belgrade University, Faculty of Pharmacy, Belgrade, Serbia andMontenegro, ²University of Belgrade, Belgrade, Serbia andMontenegro, ³Medical University, Faculty of Pharmacy, Sofia, Bulgaria

OBJECTIVE: The purpose of this work is to evaluate the access to pharmaceuticals and system in three European neighboring

countries (Slovenia, Bulgaria and Serbia) by the selected indicators. **METHODS:** Retrospective study for the period 2003–2006 year. Source of data was publicly available and the indicators refer to population, market value, value per inhabitant, the number of pharmacies and the number of pharmacists. **RESULTS:** Slovenia has a pharmaceutical market accounting for €407 millions and 5.9 pharmacists per 10,000 inhabitants in 2003 (1,996,773 inhabitants). The number of pharmacists slowly increases to 6.9 and 7.0 per 10,000 inhabitants till 2005, but pharmacies remain almost constant at around 270 and the majority of them (about 71%) are publicly owned. The Bulgarian drug market accounts approximately for €300 millions at manufacturing price in 2006 and number of pharmacists is increasing from 7.1 to 7.7 per 10,000 inhabitants in 2004 and 2005. All of the Bulgarian community pharmacies are private and are permanently increasing from 4210 into 4631 till 2006. The Serbian pharmaceutical market has been estimated at €308 million but number of pharmacists is the lowest ones accounting for 2.5, 2.6, and 2.5 per 10,000 inhabitants, in 2003, 2004, and 2005, respectively. In Serbia majority of pharmacies (77%) are private ones but there is also a strong governmental sector of 568 pharmacies dispensing the reimbursement medicines. The market value per inhabitant is €42 in Bulgaria, €41 in Serbia and 157 EUR in Slovenia. **CONCLUSION:** The results suggest that in all three countries simultaneously with the development of the market, is also changing the pharmaceutical system by increasing the number of facilities and pharmacist. It could mean that access to medicines is improving but it is still lower in value terms per inhabitant in comparison with the economically developed countries.

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FACTOR ANALYSIS OF PHARMACISTS' PERCEIVED BARRIERS TO PROVISION OF MEDICATION THERAPY MANAGEMENT SERVICES (MTMS) IN WEST VIRGINIA

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OBJECTIVE: To determine barriers to provision of MTMS perceived by pharmacists and factors associated with the likelihood of working in a pharmacy that provides MTMS. **METHODS:** Surveys with cover letters were mailed to community pharmacists (907) licensed in West Virginia using a stratified random sample. It was constructed and finalized following a review by experts and pilot tested in a convenience sample of pharmacists. Principle Components Analysis with Varimax rotation was performed to determine the factors that describe perceived barriers to provision of MTMS. **RESULTS:** A three-factor model was extracted from the responses, which explained 53.3% of the total variance. The three factors included: abilities of the pharmacist (confidence, education, and patients' willingness); pharmacy facilities (counseling area, time, and customer loyalty); and a third factor including physician acceptance and staff support. The discriminant function developed for the sample correctly classified 73.8% of the cases, and included comfort level in provision of services, whether they currently offer MTMS, abilities of the pharmacist, and perceived value of services to patients. These variables were all positively correlated with pharmacists' likelihood of working in a pharmacy that provides MTMS. **CONCLUSION:** Pharmacists who have a high comfort level with provision of MTMS, are currently providing MTMS, and perceive a great value of MTMS to patients are more likely to join pharmacies that want to participate in MTMS. This highlights the importance of advanced practice experiences to build confidence, and the role of targeted recruitment to promote MTMS in community pharmacies.

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ECONOMIC-BASED OUTCOMES ASSESSMENT OF PHARMACEUTICAL CARE IN A UNIVERSITY HOSPITAL MEDICAL INTENSIVE CARE UNIT IN TAIWAN

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OBJECTIVE: While there is raising awareness of pharmacists' contribution in a critical care team, little is known about its economic, clinical and humanistic outcomes. The aim of this study is to assess the economic-based impacts of pharmacists' intervention in a medical intensive care unit (MICU) in a medical center in Taiwan. **METHODS:** It was hypothesized that a clinical pharmacist's provision of pharmaceutical care in an MICU from October to December in 2005 (i.e., intervention group) would result in a reduction of patients' average drug expenditures and their length of stay (LOS) as compared to those patients' without pharmacists' intervention in the same unit in the same time period in year 2004 (i.e., historical control group). Independent t test was performed to investigate difference of drug expenditures and LOS. **RESULTS:** There is no statistically significant difference of average drug expenditures and LOS between two groups other than having comparable patient characteristics (e.g., ages, genders, bed occupancy rates, APACH II scores of admission to and discharging from the MICU), and their professional caregivers' characteristics (i.e., seniority of attending physicians and nurses). However, with pharmacist's provision of pharmaceutical care in MICU, there was an average of \$27 per patient daily savings of drug expenses and a reduction of 0.67 day of LOS in MICU, which may reduce the cost by \$205 per patient per admission. **CONCLUSION:** While pharmacists' involvement have been improving the quality of medical services and patients' medication use, our study further explores pharmacists' contribution in a medical critical care team. Health policy makers and administrators in hospitals should not underestimate the importance of pharmacists' roles in evaluating medical economic benefits.

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DRUG THERAPY PROBLEMS: DOES PHARMACIST'S INTERVENTION SAVE COST?

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OBJECTIVE: To conduct a cost-benefit assessment of an intensive drug therapy problems (DTP) intervention program from a societal perspective. **METHODS:** A stochastic Cost-Benefit model was constructed with data collected from a clinical pharmacist in a Nigerian federal medical centre. The number of patients, frequency of occurrence of identified DTP, accepted (and rejected) interventions plus their cost implication to society were used to estimate potential cost savings. Pharmacist's time was obtained by observation. Equipment cost for the program was estimated from local vendors while pharmacists' wages were obtained from pay slips. Inflation data from literature and a fixed discount rate of 5% was applied where necessary. The model in 1000 iterations repeated ten times used the data to estimate projected Net Benefits, Pharmacy Costs, Net Present Value (NPV) and Cost Benefit Ratio (CBR) from year 2008–2013. A sensitivity analysis was conducted to see how input data affects CBR. **RESULTS:** Unnecessary drug therapy has the highest potential cost savings. The projected amount lost from the absence of an intensive DTP intervention increased significantly from NGN5.9million in year 2008 to NGN22.5million in 2013 ($p < 0.001$) while total financial loss due to physician rejected