

innovations, with regard to their impact on patients' health status. **RESULTS:** Response rate was 78%. The seven most important pharmaceutical innovations reported were Angiotensin Converting Enzyme (ACE) inhibitors and angiotensin II antagonists, inhaled steroids and β_2 -agonists, statins, proton pump inhibitors and H_2 -antagonists, novel antibiotics, antiviral drugs for hepatitis C and calcium channel blockers. The seven most important technological innovations were: magnetic resonance imaging (MRI) and computed tomography scanning (CT), balloon angioplasty with stents, Coronary Artery Bypass Graft (CABG), gastrointestinal endoscopy, Human Immunodeficiency Virus testing, mammography and Prostate-Specific Antigen (PSA) testing. In both cases, innovations that ranked higher were used to treat high-prevalence diseases with a significant contribution to the burden of disease for the Greek population. In addition, innovations that contributed to improvements in disease diagnoses and management were also ranked higher. **CONCLUSIONS:** the epidemiological profile of the population, the effectiveness of each innovation in terms of clinical effectiveness as well as health-related quality of life, and the utility of the innovation in everyday clinical practice constitute important determinants of the physicians' opinions regarding the relative importance of medical innovations on the health status of the Greek population.

PHPI11

PREDICTING PREVENTIVE CARE SERVICE UTILIZATION IN A UNITED STATES POPULATION

Partha G¹, Vaidya V¹, Howe J², Ferrell M¹¹University of Toledo, Toledo, OH, USA; ²The University of Toledo, Toledo, OH, USA

OBJECTIVES: To analyze and predict trends in utilization of preventive care services in a United States population using a national database. Several national reports and evidence in literature indicate disparities in the utilization of preventive care services but only few have predicted utilization patterns of preventive care services. **METHODS:** The 2007 Medical Expenditure Panel Survey (MEPS), a national probability sample survey of the ambulatory civilian US population, was analyzed to determine demographic patterns of utilization. Utilization of blood pressure screening, cancer screening (mammography, colonoscopy/sigmoidoscopy, pap smear and breast), cholesterol and dental checkup and flu vaccination were used as the dependent variables while age, gender, race/ethnicity, annual income insurance status and perceived health status were used as independent variables. Descriptive statistics were used to describe the population; univariate chi-squared analysis was used to determine group differences for the categorical variables. Multivariate logistic regression model was built to predict odds of utilization of services. All analyses were carried out using SAS v9.1. **RESULTS:** Utilization of preventive care services was found to be high for blood pressure (n = 17,959, 89.0%) and cholesterol (n = 14,956, 94.7%) checkup and low for flu vaccination (n = 30,964, 21.2%). Significant chi square differences in utilization of preventive care services were found for most of the dependent variables ($P < 0.001$), save for colonoscopy/sigmoidoscopy screening. Regression model showed that young women (20–30 years) with higher income were more likely to obtain breast exams (OR = 10.584; CI = 4.312–25.980) compared with young women earning lower income (<\$20,000). Odds of utilization were nearly similar for all races. However, Hispanics were more likely to obtain a colonoscopy/sigmoidoscopy (OR = 3.069; CI = 2.216–4.250) compared with non-Hispanics. The uninsured generally had lower odds of utilization across almost all preventive care services. **CONCLUSIONS:** This study was successful in identifying age, race, income and insurance status-related disparities and in predicting preventive care service utilization in a US population.

HEALTH CARE USE & POLICY STUDIES – Prescribing Behavior & Treatment Guidelines

PHPI12

ANALYSIS OF PHARMACISTS' INTERVENTIONS OF ELECTRONIC PRESCRIPTIONS AT SULTAN QABOOS UNIVERSITY HOSPITAL IN OMAN

Al-Rashdi IS, Victoria M, Susan S, Al-Zakwani IS

Sultan Qaboos University, Al-Khouth, Oman

OBJECTIVES: To evaluate the number and types of pharmacists' interventions of electronic prescriptions at Sultan Qaboos University (SQU) hospital in Oman. **METHODS:** This was a prospective study where interventions on electronic prescriptions over one-year (2009) at SQU hospital were evaluated. A standard data collection form was used to capture the data related to drug choice and drug regimen. Clinical relevance was defined as to whether efficacy or toxicity was either improved or reduced. Clinical relevance was based on the judgments of at least two pharmacists. Analyses were performed using descriptive statistics. **RESULTS:** A total of 1,123 interventions were recorded out of 186,353 prescriptions (intervention rate/prescription = 0.6%) and 454,654 items (intervention rate/item = 0.25%) dispensed. During the year, only 3% of the interventions were administrative (absence of doctor's signature/wrong patient's card) while 97% were clinical. The clinical interventions were categorized into drug regimen (n = 886; 74%) and drug choice (n = 313; 26%). Almost 62% (n = 547) of the problems associated with drug regimen were related to wrong doses. The three most common drug choice issues included wrong formulations (n = 107; 34%), wrong drug (n = 62; 20%) and deletion (n = 62; 20%). Efficacy improved in 52% (n = 588) of the cases, avoided toxicity in 29% (n = 324) and avoided unnecessary exposure in 19% (n = 211). Interventions prevented organ damage in 1.7% (n = 20) of the cases, major in 17% (n = 188), moderate in 49% (n = 550) and minor in 32% (n = 364). The mean time (\pm SD) spent per prescription was 11 \pm 9 minutes.

CONCLUSIONS: The data show that out-patient pharmacists play an important role in drug safety and optimization of pharmaceutical care.

PHPI13

LEVELS OF MEDICATION USE AMONG GERIATRIC PATIENTS IN ACUTE GERIATRIC CARE SETTINGS IN AUSTRIA

Koenig C¹, Tschappeller B², Perner P³, Pils K³, Sommeregger U⁴, Fruehwald T⁵, Dovjak P⁶, Pinter G⁷, Boehmer F⁸, Huf J⁹, Siber H⁹, Scala M⁹, Stoiser E⁹, Kleindienst R⁹, Hartweg A¹⁰, Haid M¹¹, Krippel P¹², Hohl V¹³, Wehrmann A¹⁴, Reisinger W¹⁵, Reif-Gintl T¹⁶, Mueller W¹⁷, Gaugeler R¹⁸, Macho A¹⁹, Habacher W¹, Beck P¹, Mrak P²⁰

¹Joanneum Research, Graz, Austria; ²JOANNEUM RESEARCH, Graz, Styria, Austria; ³SMZ Sophienspital, Vienna, Austria; ⁴KH Hietzing mit NZ Rosenhügel, Vienna, Austria; ⁵KH—Hietzing mit NZ Rosenhügel, Vienna, Austria; ⁶LKH Gmunden, Gmunden, Austria; ⁷LKH Klagenfurt, Klagenfurt, Austria; ⁸Albert Schweitzer Klinik, Graz, Austria; ⁹LKH Laas, Koetschach, Austria; ¹⁰LKH Rottenmann, Rottenmann, Austria; ¹¹Marienkrankehaus Vorau, Vorau, Austria; ¹²LKH Fuerstenfeld, Fuerstenfeld, Austria; ¹³LKH Voitsberg, Voitsberg, Austria; ¹⁴KH Goettlicher Heiland, Vienna, Austria; ¹⁵Herz-Jesu-Krankenhaus, Vienna, Austria; ¹⁶KH Barmherzige Brueder, Vienna, Austria; ¹⁷KH der Elisabethinen, Klagenfurt, Austria; ¹⁸Oeffentliches KH Waiern/Feldkirchen, Feldkirchen, Austria; ¹⁹Hartmannspital, Vienna, Austria; ²⁰LKH Hoergas, Gratwein, Austria

OBJECTIVES: Adequate levels of medication are critical among elderly patients given the existence of co-morbidities and impaired levels of functioning. Using patient data collected via a web-based information system, we investigated the average number of items prescribed to geriatric patients treated in Acute Geriatric and Remobilisation Units (AGR) in Austria between January 2008 and December 2009. We investigated the association of age with medication levels and assessed whether treatment in an AGR led to changes in levels of medication. **METHODS:** The standardised data set developed by QiGG was made available by AG/Rs using the geriatric module of the online information system "Healthgate BARS". We assessed patients' medication data including number of prescribed items at admission and discharge. Baseline characteristics (including age) were assessed. Additionally, changes in medication prescriptions during the stay were documented. **RESULTS:** Data from 14,923 stays were analyzed. Patients were prescribed a mean of 8.4 agents (± 3.6) at admission which was significantly reduced to a mean of 8.0 (± 3.35) at discharge after a mean length of stay of 18.9 (± 14.1) days. A reduction in levels of medication was observed among all age groups (young-old: -74, middle-old: 75–84, oldest-old: 85+). The oldest old had the lowest mean number of prescriptions at both admission (8.1 \pm 3.4) and discharge (7.6 \pm 3.1). There was an overall increase in documented changes to prescriptions (either in number or type of medications) during this period from 61.1% to 80.1%. **CONCLUSIONS:** The observed reductions in levels of medication across all analyzed groups during (in-patient) stays in AG/Rs, as well as the documented changes in prescriptions, may suggest increased awareness both of over-prescription and the necessity of adequate medication levels in special geriatric care.

PHPI14

DERIVING DOCTORS' PRESCRIBING PATTERNS FROM HEALTH CARE CLAIMS: AN INSTRUMENTAL VARIABLE ANALYSIS

Baser O¹, Wang L², Xie L², Dysinger A², Gust C², Yuce H³, Baser E³

¹STATinMED Research/University of Michigan, Ann Arbor, MI, USA; ²STATinMED Research, Ann Arbor, MI, USA; ³New York City College of Technology-CUNY/STATinMED Research, New York, NY, USA

OBJECTIVES: Both observed and unobserved bias in observational claims data are controlled with instrumental variable approach. However, it is difficult to find a valid instrument that is strongly correlated with treatment choice but not directly correlated with outcomes. In this paper, we derived doctors' prescribing patterns from the claims data and examined their validity. **METHODS:** Based on U.S. claims data, we assigned patients a unique doctor based on the greatest number of office visits during the 6 months pre-index period. For each physician, and for each 6-month calendar block of time, we estimated the physician preference as the time-varying proportion of patients treated with selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) during that interval. We applied Shea's partial R-square method, the Anderson canonical correlation, and Cragg-Donald tests to check if doctors' prescribing patterns were weak instruments. **RESULTS:** Tests showed that doctors' prescribing patterns are a valid and strong instrument for outcomes research studies. We showed that patients were more likely to be prescribed generic SSRIs relative to non-generic SSRIs if doctors' prescribing patterns favored generic prescription ($p = 0.000$). Similarly, patients were less likely to be in the SSRIs group if doctors' prescribing patterns favored SNRI prescriptions ($p = 0.000$). We showed that the treatment coefficient on the adherence model that does not control for the unobserved bias was 10% lower than the one that uses the instrumental variable method. **CONCLUSIONS:** Doctors' prescribing patterns are important factors for prescription decisions. Any outcomes research models such as compliance, adherence or treatment effect studies should incorporate these patterns. Models that fail to control for these variables might contain omitted variable bias.

PHPI15

THE INCORPORATION OF ECONOMIC EVIDENCE IN THE DUTCH CLINICAL PRACTICE GUIDELINES

Tan SS, Hakkaart-van Roijen L

Erasmus Universiteit Rotterdam, Rotterdam, The Netherlands

OBJECTIVES: Because economic evaluations aim to decrease practice variations and advocate (cost)-effective interventions, their use in the formulation of practice