405 citations. Two reviewers independently examined each citation and abstract. We conducted three levels of review resulting in 94 papers for full review. Data were analyzed using qualitative and quantitative methods, including a meta-analysis using a random effects model (REM) and Mantel-Haenszel (MH) summary estimate. REM was common as research design involved randomized controlled trials (RCTs) (60%), 64%. Seventy-two (77%) studies involved interventions that sought to directly improve medication compliance, 12 (13%) had to do with interventions to improve compliance through a multidisciplinary process, 3 (3%) involved interventions to indirectly improve compliance through changing physician practice, and 5 (5%) were other types. Thirteen studies (14%) involved the use of a theoretical framework to guide the research. A meta-analysis was conducted of RCTs of educational interventions, (N = 6). The REM showed a trend toward statistical significance with a risk ratio of 1.03 for non-compliance (95% CI: 0.68–1.09, p = 0.05). The MH summary estimate was statistically significant with a risk ratio of 0.83 for non-compliance (95% CI: 0.75–0.92, p = 0.00), favoring patients who received educational interventions to improve compliance. However, the X2 test for heterogeneity was significant, p = 0.020 and p = 0.016 respectively. CONCLUSIONS: Our analysis indicated that most interventions focused on directly improving medication compliance. The meta-analysis illustrated educational strategies provide a significant benefit in reducing non-compliance in patients using antihypertensives. The small sample size may have contributed to the observed heterogeneity and require additional investigation. Our findings have implications for designing future research and implementing educational interventions.

MEDICATION ADHERENCE AND CARDIOVASCULAR DISEASE-RELATED HEALTH CARE RESOURCE UTILIZATION AMONG PATIENTS TREATED WITH FIXED DOSE COMBINATION VERSUS MULTI-PILL COMBINATION THERAPIES: A Prospective Study of Patients with Dyslipidemia in a Managed Care Population

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OBJECTIVES: To investigate the impact of medication adherence on total health care resource utilization (THR) among dyslipidemia patients initiating fixed dose combination (FDC) therapy versus multi-pill combination (MPC) therapies in a managed care population. METHODS: Using claims data from the HealthCore Integrated Research Database, study patients 218 years were identified as newly-initiating on FDC [Advicen: niacin extended release (NER) + lovastatin] or MPCs [simvastatin + NER (INH), lovastatin + NER (LR)] between January 1, 2000–June 30, 2006 [index date], with a minimum 6 months pre- and 12 months post-index health plan eligibility. Adherence was measured using medication possession ratio (MPR): Medication non-negative binomial regression was used to estimate association between study cohorts and one-year post-index cardiovascular disease (CVD)-related THR (sum of emergency room, inpatient, and outpatient visits) after controlling for differences in baseline age, gender, THR, Deyo-Charlson morbidity index (DCI) score, number of non-dyslipidemia medications, and post-index adherence. RESULTS: Among study patients [988 patients (665 FDC; 167 NER; 663 NER/L)], those initiating FDC therapy were significantly younger [mean (SD) age of 51.10.5 vs. 56.9 (9.8) years, p < 0.0001], comprised of fewer males (73.0% vs. 81.5%; p < 0.0001), and had significantly higher DCI scores (0.43 vs. 0.38 vs. 0.39 vs. 0.16; p < 0.0001) compared to MPC patients. During one-year follow up, average MPR was higher among FDC patients versus both NER/L and NER/L patients (0.54 to 0.55 vs. 0.51 to 0.53 and 0.47 to 0.48, respectively, p < 0.01). Controlling for post-index adherence, multivariate regression analyses demonstrated that FDC patients had a 13% decrease in a CVD-related THR versus MPC patients [IRR: 0.881, 95% CI: 0.761–0.882; p < 0.0001]. CONCLUSIONS: FDC-initiated patients showed improved medication adherence and reduced CVD-related THR versus MPC-initiated patients in this managed care population. Further studies on clinical and economic impact of improved adherence to FDC dyslipidemia therapy are warranted.

MEASURING THE IMPACT OF SOCIO-DEMOGRAPHIC CHARACTERISTICS ON PATIENT PERISTENCE IN CHRONIC MARKETS

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OBJECTIVES: Although patient finances are widely studied as predictors of adherence, claims databases rarely include variables other than copay and insurance coverage. Linking personal income, level of education, and ethnicity to prescription data can enhance analyses of socioeconomic factors and adherence. We compared persistence in chronic markets - statins and oral antidiabetics (OADs) - by income, ethnicity, and in linked administrative databases. METHODS: Using IMS’ LifeLink longitudinal prescription database (LRs), linked to commercial socio-economic data, we selected 145,370 patients initiating statins and 57,079 patients initiating OADs after a minimum 12 month clean period. LRAs captures 62% of prescription claims contributed by retail pharmacies in the US. Co-proportional hazards models compared persistence by income, ethnicity, education, and method of payment. RESULTS: Mean days of statin persistence was higher for patients with household income <$50,000 (144 days) vs. >$50,000 (114 days) (p = 0.001). Patients with very low income (<$5k) were more frequently on Medicaid or over age 65; these very low income patients had higher persistence (150 days) than patients with income of $15–40,000/year (144 days) (p = 0.005). Persistence also increased with level of education (graduate school = 154 days vs. high school = 147 days, p = 0.001) and differ by ethnicity (Caucasian = 150 days, Hispanic = 127 days, African American = 124 days; p < 0.001). Similar trends were observed with OADs. CONCLUSIONS: Patients with higher household income demonstrate slightly improved persistence, while patients with very low income, but subsidized pharmacy benefits, also have higher average persistence. Lower persistence also found with higher levels of education and across ethnic groups.

FRACTION OF NURSING HOME ADMISSION AND INCREMENTAL COST ATTRIBUTABLE TO NON ADHERENCE TO ANTI HYPERTENSIVE MEDICATIONS

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OBJECTIVES: We estimated the relationship between nursing home admission and non-adherence to anti-hypertensive medications. We calculated the incremental proportion of nursing home admission that was due to non-adherence, and the annual incremental cost of the proportion of nursing home admission due to non-adherence. METHODS: We calculated adherence scores in a cohort of 225,624 subjects with hypertension from the MarketScan database. We used a generalized linear model with a binomial distribution and a log link to estimate adjusted relative risks of nursing home admission. We calculated the fraction of nursing home admission attributable to non-adherence. RESULTS: We showed that non-adherence to antihypertensive medications increases the risk of nursing home admission. Among non-adherent subjects, 10.8% were admitted to nursing homes. In the general population of community-dwelling elderly subjects, 1.9% of nursing home admissions were attributable to non-adherence to anti-hypertensive medication. Extending these results to the United States elderly (age ≥ 65) population with hypertension, we found that annually 28,372 subjects were admitted to nursing homes in 2002 because of non-adherence to anti-hypertensive medications. In 2002, the cost of nursing home admission due to non-adherence was estimated to be $1.7 billion. CONCLUSIONS: Anti-hypertensive medication non-adherence was a risk factor for elderly transitioning to long-term care facilities. Since non-adherence may be viewed as a proxy for lack of adherence, our results show the potential benefits related to interventions that could provide social support to elderly patients, such as assistance with medication administration.

FACTORS AFFECTING ADHERENCE TO ANTIHYPERTENSIVE MEDICATION IN A NIGERIAN POPULATION

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OBJECTIVES: Poor adherence to anti-hypertensives severely compromises the effectiveness of treatment. The aim of this study was to measure adherence to antihypertensive therapy and to determine the factors that are associated with poor adherence in a sample of hypertensive patients in Nsukka, a semi urban town located in South-Eastern Nigeria. METHODS: A cross sectional, hospital survey was conducted in Nsukka. Adherence to antihypertensive medications was assessed on participants that were hypertensive. Patient self-reports about the number of pills taken over a prescribed period were used to estimate adherence as a percentage. In addition, Moksony Medication Adherence Scale (MMAS) was used in order to increase the strength and consistency of patient's self-report on adherence. RESULTS: A total of 756 participants were screened for hypertension. Forty-seven persons were hypertensive. Mean adherence to hypertension medication was 70.7% ± 37.9%. Mean adherence score was correlated to MMAS score (r = 0.401, p < 0.05). Educational status, making a medication a habit, and experience of side effects were independently correlated to adherence. Multiple linear regression showed that for every increase in educational status, adherence increased by 12.1%. Also making medication a habit increased adherence by 35.09%. However, experience of side-effect decreased adherence by 20.1%. CONCLUSIONS: These factors identified as correlates of adherence to antihypertensives in the study population could be used to design interventions to improve adherence to hypertension medications in Nigeria.
Abstracts

PCV87 IS MEASURING HEALTH STATUS BENEFICIAL IN HEART FAILURE PATIENTS?
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OBJECTIVES: Measuring patients subjective health status (HS) has become accepted in cardiology. However, the effect of these measurements on outcome and well-being of HF patients remains unclear. METHODS: The aim of this study was to investigate the impact of measuring HS on intermediate patients’ well-being. In two Austrian heart failure outpatient wards 173 patients with documented heart failure were randomized into an intervention (IG) and control group (CG). Patients HS in the IG was measured prior to the physician contact using the Short Form 36 and Hospital Anxiety and Depression Scale. IG patients received feedback electronically feedback on their individual HS. The results were also made available to the treating physicians. They were encouraged to give additional feedback or to apply results for auxiliary treatment planning (e.g., counselling). Patients in CG received usual care without measuring HS prior to the physicians visit. After the visit, in patients both groups their health-related quality of life (HRQL) and general health on the MacNew Heart Disease HRQL Instrument. Patients were re-assessed by postal questionnaire 6 months after initial visit. RESULTS: Complete 6-month follow-up was available for 139 patients (79% response rate; 25.3% female; age 58 ± 13.2, 64.2% retired; NYHA E: 14.7%, NYHA II: 53.9%, NYHA III: 24.5%, NYHA IV: 6.7%). Physical HRQL significantly deteriorated in both groups (IG: -0.3; CG: -0.4, both p < 0.01), whereas no significant deterioration for emotional and social HRQL was reported by the IG (IG: -0.1; 0.1, p = ns). Overall health improved in 34% of the IG patients, but only in 22% of the CG patients [ARR = 12%; p = 0.09; NNT = 9]. CONCLUSIONS: Routine assessment of patients subjective HS appears to be beneficial in maintaining the well being of heart failure patients (NNT = 9), which naturally decreases over time. These results, however, need to be replicated in an adequately powered study [N = 214, χ2<0.05, 1-α = 0.89].

PCV88 EVALUATION OF COMPARATIVE EFFECTIVENESS: A MODEL FOR GENERATING HYPOTHESES AND DETERMINING SAMPLE SIZE
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OBJECTIVES: Although payers are asking for comparative effectiveness data, risk of conducting studies is significant. One possible intermediary step is to leverage a validated instrument, the Treatment Satisfaction Questionnaire for Medication Version 1.4 (TSQM), to identify domains for separation and calculate sample size required for superiority in a comparative study. METHODS: We used data from Guard.org, a consumer drug safety service totaling over 1 million members, whereby patients are randomly invited to complete the TSQM on an on-going basis. TSQM is a 14-item reliable and valid instrument providing scores on four scales—effectiveness, side effects, convenience and global satisfaction. For this study, we analyzed all responses from patients using lisinopril and metropolol. For sample size evaluation, adjusted means (LeMean) and standard errors (SE) were generated for each treatment using an analysis of covariance model controlling for: patient age; gender; self-reported severity of disease; and use of other hypertensive, diabetes and heart failure medications. RESULTS: A total of 625 patients, 365 (58.1%) on lisinopril and 262 (42.9%) on metropolol completed the TSQM between March and November 2008. TSQM domains had good internal consistency with Cronbach’s alpha values over 0.85. There were significant differences between the two treatments on age, self-reported severity and use of diabetes and heart failure medications. LeMean (SE) for lisinopril and metropolol was 68.80 (1.46) and 66.01 (1.53) on effectiveness; 90.72 (1.83) and 85.66 (1.91) on side effects; 87.09 (1.28) and 81.55 (1.34) on convenience; and 67.67 (1.78) and 62.92 (1.86) on global satisfaction, respectively. Given differences observed above a sample size of 640 per treatment would be required to detect a statistically significant difference at a two-sided alpha of 0.05 with 80% power. CONCLUSIONS: This obtains feedback on comparative effectiveness study design and risk by conducting a pre-study that administered a validated instrument to an on-line community of

PCV89 DIABETES MANAGEMENT AND KNOWLEDGE IMPROVEMENTS AS A PROFILE OF PATIENT EDUCATION: A COMMUNITY-BASED, RANDOMIZED CLINICAL TRIAL
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OBJECTIVES: The purpose of this study is to assess: 1) the impact of different education modules (class education, mail education or both) on Hemoglobin A1c control in diabetic patients with hypertension and 2) patient knowledge and skill substance evidence. METHODS: 108 adult patients were enrolled in three separate groups (1) Education only, (2) Mail only, and (3) Mail & Class. All patients were re-evaluated three months after enrollment. RESULTS: All groups had significant improvements in HbA1c, the education groups (Class & Mail) had significantly better improvements than the Mail only group significant at p<.05. The final A1c was 7.7% for Class only, 7.8% for Mail only and 8.1% for Mail only. CONCLUSIONS: Mail only was effective in improving A1c, but patient education about the importance of HbA1c improvements based on class was most effective for patient disease process awareness based on Knowledge Tool Test scores. METHODS: Adult patients with type-2 Diabetes with co-morbid hypertension were recruited from community based primary care physicians offices. The study was composed of 825 diabetic patients, a subset of those enrolled in the Baltimore Partnership Programs to Reduce CVD Disparities project based on a minimum of one year of follow-up. Intervention patients received education either by class, mail, or both. HbA1c was measured at baseline and patients were followed-up every six months. Multiple regression models were used to assess the effects of 1) different education modules on HbA1c change, defined as percent change of HbA1c from baseline; 2) different education modules on change of patients’ disease process awareness, defined as change of Knowledge Tool Test score from the baseline. The model was adjusted for sociodemographic variables. RESULTS: The majority of the diabetic patients were African American (38.61%), females (45.62%), and the mean age was 65 years. The mean HbA1c reduction was -0.8. As compared to the control patients (-0.7), the HbA1c reduction was larger in intervention patients (-0.9). Males (0.82 vs. -0.78) had a higher reduction in HbA1c values than females. Opposite trends were found in females. CONCLUSIONS: Community based patient sample, decreased trend in HbA1c level and an increased trend in Knowledge Tool Test score is seen among intervention patients, with class education module being more effective in patient disease process awareness. These results may help guide future patient intervention programs for diabetes and hypertension management.

PCV90 PHARMACEUTICAL SPENDING ON CHRONIC DISEASES IN CONSUMER DIRECTED HEALTH PLANS
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OBJECTIVES: Consumer directed health plans (CDHP) sometimes incur a larger burden due to insurance coverage. How do CDHP plans affect the consumption of pharmaceuticals for chronic diseases such as hypertension, high cholesterol and diabetes? METHODS: We obtained data on all employees from a large private U.S. employer for the 2005 to 2007 time period. All enrollees in the CDHP plan in this study are initially provided an employer funded Health Reimbursement Account (HRA) from which they can purchase medical care. Funds in these accounts range from $1000 to $2000 depending on whether the enrollee is in an individual or a family health plan. After the HRA funds are exhausted, there is a second phase in which enrollee spending is completely out of pocket range from $500 to $2000), after which time the insurance plan begins coverage. We compare average daily pharmaceutical spending for individuals with diabetes, hypertension and high cholesterol as they move through each of the different coverage thresholds (HRA), Out-of-Pocket and Full-Coverage). RESULTS: Using lsd-9 codes we identified 27,644 individuals diagnosed with diabetes, hypertension or high-cholesterol. For each of these diseases average daily pharmaceutical expenditure was substantially lower when individuals were in the HRA and out-of-pocket sections of their CDHP plan as compared to when they were in the Full-Coverage part of their insurance plan. Average daily expenditure on pharmaceuticals was approximately $2.60 for individuals in the HRA section of the plan, $1.00 for individuals who moved into the out-of-pocket part of the insurance plan and $4.00 for individuals who were covered by insurance. CONCLUSIONS: Findings from this study suggest that cost-sharing levels in CDHP plans affect pharmaceutical spending on the treatment of chronic diseases. Reductions in chronic disease pharmaceutical expenditures have the potential to negatively affect enrollee health outcomes.

PCV91 DISPARITIES IN CORONARY ARTERY DISEASE CARE AMONG ENROLLEES WITH AARP MEDICARE SUPPLEMENT INSURANCE
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OBJECTIVES: Discover if age-, gender-, race-, or income-related disparities in care for coronary artery disease (CAD) exist among Medicare enrollees with supplement plan coverage (i.e Medigap). METHODS: Data were obtained from UnitedHealth Group’s database of AARP Medigap enrollees. Patients were selected into the study if they had one or more medical claims with a diagnosis of CAD from July 1, 2006- June 30, 2007. Logistic regression analyses tested for age-, gender-, race-, or income-related differences in the likelihood of receiving an office visit, coronary angiography, or surgical intervention. The regression models controlled for socioeconomics, health