ON THE HEALTH CARE UTILIZATION IN HYPERTENSIVE IMPACT OF ADOPTION OF NEW ANTIHYPERTENSIVE DRUGS WITH HEART FAILURE

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OBJECTIVE: The cost-effectiveness of heart failure (HF) disease management depends on avoiding future high costs. Prospectively identifying HF patients who are likely to incur high costs would be beneficial. METHODS: We used a 100% sample of 1,363,977 Medicare beneficiaries hospitalized with a primary diagnosis of HF (ICD-9-CM codes 428.x, 402.x1, 404.x1, 404.x3) between 2001 and 2004. The earliest HF hospitalization for each beneficiary was considered the index. We summed Medicare payments for rehospitalizations in the year following the index hospitalization, adjusted costs to 2001 dollars, and created a binary variable, with patients in the 4th quartile (> $16,500) defined as “high cost.” Comorbidities and risks were obtained from the index claim and from inpatient claims in the prior year. Logistic regression was used to predict high cost status in a 75% random derivation sample; the model was validated in the remaining 25%. We evaluated the calibration and discrimination of the model in both samples and refit the model on the entire sample. RESULTS: Average Medicare payments in the year following index hospitalization were $38,300 (SD $29,146) among high cost patients and $4272 (SD $4857) among patients in the lower 3 quartiles. Inpatient cost in the prior year was the strongest predictor of inpatient cost in the subsequent year (OR 2.31, 95% CI: 2.27–2.35 for prior year inpatient costs > $16,500 vs. no inpatient costs in the prior year.) In both the derivation and validation cohorts, 11% of patients in the lowest decile and 45% of patients in the highest decile were high cost. The model was well-calibrated. The c-statistic was 0.65 for both the derivation and validation cohorts. CONCLUSION: There is limited ability to predict high cost HF patients using claims data alone. Future studies should assess the value of incorporating clinical variables.

IMPACT OF ADOPTION OF NEW ANTIHYPERTENSIVE DRUGS ON THE HEALTH CARE UTILIZATION IN HYPERTENSIVE PATIENTS

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OBJECTIVE: This study aims to analyze the hypothesis that the adoption of newer antihypertensive medications on aggregate health care utilization and on non-prescriptions expenses respectively as compared to non-NDA’s. Also NDA’s had 0.124 more ER visits as compared to non-NDA’s. These results were statistically insignificant at 0.05 level when adjusted for age, gender, income, race, ethnicity, number of co-morbid conditions and insurance status. CONCLUSION: No relation was found between the total health care utilization and adoption of newer antihypertensive medications on aggregate level. This signifies the need to scrutinize the pharmacoeconomic evaluation of each new drug before acceptance by physicians and pharmacy managers.

THE EFFECT OF MEASUREMENT ERROR FROM POINT-OF-CARE INR DEVICES ON WARFARIN DOsing DECISIONS

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OBJECTIVES: Assessment of point of care devices (POCs) that measure INR does not typically include the impact of measurement error on clinical decision-making. This study determined the effect of POC measurement error on warfarin dosing decisions, and how this effect varies over the INR scale. METHODS: For each patient, INR was simultaneously measured using two different POC devices and standard laboratory techniques. Clinicians blinded to INR measurement technique were asked to state a warfarin dosing decision for each INR value. The difference between each POC-derived INR and the laboratory standard measure were recorded for each patient, as were differences in warfarin dosing decisions based on the POC devices versus laboratory standard measures. RESULTS: A total of 202 patients on warfarin therapy were enrolled. Overall, the POC devices resulted in different warfarin dosing decisions compared to the laboratory standard in 114 of 404 instances (28%, 95% CI: 24–33%). Discordant dosing decisions resulting from POC and laboratory measures were most common when the laboratory INR was between 1.5–1.99 (40/92, 43%, 95% CI: 33–55%) and 3–3.49 (15/36, 42%, 95% CI: 26–59%). Relatively small amounts of measurement error from the POC devices resulted in different warfarin dosing decisions between the laboratory and POCs at specific intervals in the INR scale. For example, overestimation of INR by the POC by 0.2–0.39 INR resulted in discordant warfarin dosing decisions in 44% of instances when the laboratory INR was between 1.5–1.99. CONCLUSIONS: Measurement error in POC devices leads to different warfarin doses in a high proportion of cases. A relatively small amount of measurement error can result in different warfarin dosing decisions if it occurs at specific intervals on the INR scale. Investigators and regulators should consider the varying effect of measurement error along the INR scale and its impact on clinical decision-making when evaluating POCs.

IS THERE A LEARNING CURVE ASSOCIATED WITH EXERCISE TRAINING IN PATIENTS WITH HEART FAILURE?

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OBJECTIVE: Estimating the cost-effectiveness of disease management programs requires a comprehensive assessment of per-
sonnel and patient time. Assessments at a single time point may under- or overestimate the time required to perform related activities. In this study, we use data from a large clinical trial of exercise therapy in patients with heart failure to evaluate whether there is evidence of a learning curve with regard to time spent on non-exercise activities across 36 supervised exercise training sessions across 12 weeks. METHODS: As part of the economic evaluation planned alongside the NIH-sponsored HF-ACTION trial, a Provider and Patient Time Assessment Survey was admin- istered across 9 study sites representing a subset of 56 patients. The survey was designed to assess provider time with and without the patient, pre- and post-exercise, to account for a variety of related tasks (e.g. pulling charts, patient education, scheduling, etc.). Linear growth models were used to model the trajectory change of time spent on ‘non-exercise’ activities across 36 visits. RESULTS: Data were available for 39 (69.6%) patients who completed all 36 exercise sessions, 7 (12.5%) patients who were still enrolled in ongoing exercise training, and 10 (17.9%) patients who discontinued exercise training. The average non-exercise time associated with supervised training was 30.3 (SD = 19.8) minutes, comprised of 20.6 minutes spent with patients and 9.5 minutes without patients. After adjusting for whether warm-up/cool-down activities were included, the total time spent on non-exercise activities decreased significantly (parameter estimate: −1.04 minutes/week; p = 0.007), with approximately equal reductions in time with patients (−0.57 minutes/week; p = 0.038), and without patients (−0.65 minutes/ week; p = 0.058) over 12 weeks. CONCLUSION: Our analysis suggests that providers and patients experienced efficiency gains in regard to time spent on activities associated with supervised exercise training. These results demonstrate the potential impor- tance of comprehensive time assessment when evaluating disease management programs.

**PCV98**

THE EFFECTS OF STEP THERAPY: LOOKING BEYOND IMPACTS ON PRESCRIBING RATES AND COSTS

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OBJECTIVE: The goal of the study was to test the effects of step therapy on pharmaceutical and medical utilization and costs. This study examined the effect of step therapy for anti-depressant and antihypertensive medications. METHODS: The data was extracted from the MarketScan database, representing the health care experience of enrollees in employer-sponsored, commercial health plans. The sample consisted of employees and dependents of 4 employers (2-step therapy and 2 controls) who were continuously enrolled in the MarketScan database from 2003 through the third quarter of 2006 and who used antidepressants (N = 15,522 step therapy; N = 45,244 control) or antihypertensives (N = 11,851 step therapy; N = 30,822 control) at least once during the study period. An analytic file was created using a panel data framework, yielding 15 observations or quarters of data per patient. Chi-square and Student’s t-tests were computed to compare demographic and clinical characteristics as well as outcome variables between the step therapy and comparison groups after step therapy had been implemented for plans with step therapy. Multivariate general- ized estimating equation (GEE) models were used to estimate the effects of step therapy on spending and utilization while controlling for important covariates and adjusting for clustering by patient. RESULTS: Step therapy had the intended effect of increasing generic prescribing and lowering brand prescribing. Overall, medication costs were reduced in the step therapy plans in the initial period following implementation. However, inpa- tient, outpatient, and emergency room utilization and costs were higher in the step therapy plans after step therapy was implemented relative to the comparison groups. Medication discontinuation rates for the targeted drugs increased in step therapy plans. CONCLUSION: Implementation of step therapy produces intended and unintended results. The intended results of reducing drug costs are found to co-occur with unintended results that may adversely affect patients as evidenced by higher ER and inpatient utilization.

**PCV99**

THE FIRST MOVER STRIKES AGAIN. COST-EFFECTIVENESS OF STATINS AND PRESCRIBING BEHAVIOR IN PORTUGAL

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OBJECTIVE: In this study, cost-effectiveness of different doses of Atorvastatin, Pravastatin, Rosuvastatin and Simvastatin are compared. The results are used to evaluate if prescription deci- sions follow willingness to pay. METHODS: Incremental cost-effectiveness ratios (ICERs) were calculated using a model to be published in Value in Health. However, for this analysis, we used efficacy estimates from a meta-analysis that compared several statins across dose ranges. Furthermore, we considered two sce- narios. In scenario 1, doses are doubled after 12 weeks of treat- ment if the LDL level is over 115 mg/dL; in scenario 2, the dose is fixed. For the analysis of prescription patterns and costs per dose, we used official data. RESULTS: Results show that, in both scenarios, Pravastatin 10 mg and 20 mg and Atorvastatin 10 mg are dominated. Taking Simvastatin 10 mg as reference, the ICER of Simvastatin 20 mg in scenario 1 is €203,780 and the ICER of Rosuvastatin 10 mg is €108,293, while the ICER of Rosuvastatin 10 mg compared to Simvastatin 20 mg is €61,670. In scenario 2, the ICERs of Simvastatin 20 mg and Rosuvastatin 10 mg are €199,933 and €61,238, respectively, while Rosuvastatin 10 mg dominates Simvastatin 20 mg. In both cases the Simvastatin 20 mg ICER is well above the €50,000 per life year gained threshold. However, Simvastatin 20 mg is the most prescribed alternative in Portugal. In fact, during 2006 its market share was around 66%, while Simvastatin 10 mg accounted just for 2% and Rosuvastatin 10 mg for 12%. Future research will show how results change with the market launch of Rosuvastatin 5 mg.

CONCLUSION: Doctors are not influenced by economic evaluation when prescribing statins. Results show that Simvastatin 10 mg should be used as first line and Rosuvastatin 10 mg as second line strategies. Most probably, the high market share of Simvastatin 20 mg reflects the “first mover” advantage in the market.

**PCV100**

THE EFFECTIVENESS OF A PATIENT AND PHYSICIAN EDUCATIONAL PROGRAM IN INITIATING STATIN THERAPY AMONG DIABETICS

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OBJECTIVE: To evaluate the effectiveness of a patient- and physician-directed communication program to consider initia- tion of statin therapy among diabetics. METHODS: Educa- tional letters were sent to physicians and patients from a large commercial health plan. Physician- and patient-directed letters were sent to 593 and 579 patients respectively. Letters to the