Diabetic patients with continuous coverage from January 2002 to December 2004 in a state Medicaid program, and who had an index prescription claim for ACEI/ARB in the first six months of 2002 were included in the study. Adherence with ACEI/ARB therapy was measured using the proportion of days covered (PDC) during the 12-month post-index period. Nonadherence was defined as PDC < 0.8. The primary outcomes of interest were diabetes-related hospitalization and all-cause mortality in the follow-up period (end of post-index period to December 31, 2004). Multivariate regression analyses were performed to assess the independent effect of nonadherence with ACEI/ARB on outcome measures. **RESULTS:** 14,428 patients met our inclusion criteria. Among them, 75% were females and the mean age was 60.5 (±14.2) years. About 69% were nonadherent with prescribed ACEI/ARB therapy. During follow-up, 10.9% patients had diabetes-related hospitalizations and 1.1% died for any reason. After controlling for baseline patient characteristics including age, gender, race, prior hospitalization, and comorbidities (Charlson comorbidity index), in comparison to adherent patients, the odds for diabetes-related hospital admission was 72.7% (OR: 1.727; 95%CI: 1.508–1.976) higher for nonadherent patients. The odds for all-cause mortality were not statistically significant between adherent and nonadherent patients (OR: 1.011; 95%CI: 0.721–1.419). Results of sensitivity analyses stratifying on patient age were consistent with our primary findings. **CONCLUSIONS:** The results suggest that nonadherence to ACEI/ARB is common among diabetic patients enrolled in a state Medicaid program. Nonadherence to ACEI/ARB appears to be associated with higher risks for diabetes-related hospitalization.

(For CM3 see page A206) **CM3**

CM4

IMPACT OF MULTIPLE MEDICATION COMPLIANCE ON HEALTH CARE UTILIZATION IN PATIENTS WITH COMORBID TYPE II DIABETES AND CARDIOVASCULAR DISEASE

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OBJECTIVES: To investigate the association of multiple medication compliance with health care utilization. **METHODS:** We identified patients ≥40 years of age with a diagnosis of type II diabetes and comorbid cardiovascular disease (CVD) including hypertension, coronary artery disease, and heart failure from California Medicaid claim data between 2002 and 2004. Proportion of days covered ≥0.8 was used to assess medication compliance. Multivariate two-part models were used to determine health care utilization in 2004 across different medication compliance statuses after controlling for confounding factors. **RESULTS:** A total of 21,740 patients were analyzed. Only 18% of patients were compliant with both diabetes and CVD medications, 32% compliant with only diabetes medication, and 7% with only CVD medication. Adherence to both diabetes and CVD medications was significantly associated with decreased number of emergency room (ER) visits (0.052 ± 0.011, $p < 0.0001$), decreased hospitalization (0.025 ± 0.004, $p < 0.0001$), increased number of outpatient visits (10.02 ± 0.67, $p < 0.001$) and increased number of prescription fills (35 ± 0.89, $p < 0.0001$). Mean covariate adjusted ER visits (0.26 ± 0.62) in patients who did not fill appropriate medications or were noncompliant with medications were significantly higher than those compliant with both diabetes and CVD medications (0.19 ± 0.42, $p = 0.000$), or those compliant with only diabetes medications (0.21 ± 0.46, $p = 0.000$). Mean adjusted number of hospitalizations in patients compliant with only CVD medication (0.11 ± 0.31, $p = 0.01$) was significantly higher than those compliant with both diabetes and CVD medications (0.08 ± 0.22, $p = 0.01$) or compliant with only diabetes medication (0.08 ± 0.20, $p = 0.001$). **CONCLUSIONS:** Compliance with multiple medications was significantly associated with a decrease in the number of ER visits and hospitalizations in a California Medicaid population with type II diabetes and comorbid CVD.

PODIUM SESSION III: CARDIOVASCULAR OUTCOMES RESEARCH STUDIES

CV1

PERIOPERATIVE BLOOD PRESSURE CONTROL DURING CARDIAC SURGERY REDUCES HOSPITALIZATION COSTS

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OBJECTIVES: The association between perioperative blood pressure (BP) control and reduced risks of death and complications in cardiac surgery patients has been demonstrated in the ECLIPSE (Evaluation of CLevidipine In the Perioperative Treatment of Hypertension Assessing Safety Events) trials. This study evaluated the relationship between perioperative BP control and the total costs of hospitalization and 30-day readmission in ECLIPSE patients undergoing coronary artery bypass grafting (CABG) or valve surgery. **METHODS:** Cost data were obtained from the Massachusetts Acute Hospital Case Mix Database for 2005–2007 for patients undergoing cardiac surgery and analyzed separately for patients who experienced death, myocardial infarction, stroke, bleeding, infections, renal failure, multiple complications, or none of these complications. These data were used to assign 2009 hospitalization costs to ECLIPSE patients by matching their complications and length of stay. BP control was defined as area under the curve (AUC) capturing the magnitude and duration of systolic blood pressure excursions outside pre-specified ranges and expressed in units of mm Hg × minutes/hour. Smaller AUC values represent more precise BP control. The relationship between AUC and costs was examined using a log-normal model. Outcomes were evaluated for all patients, patients undergoing CABG, patients undergoing valve surgery, and patients with both procedures. **RESULTS:** Mean costs for patients in ECLIPSE were $52,941 and ranged from $47,349 for patients with CABG only to $79,442 for patients with CABG and valve surgery. After controlling for potential confounders, perioperative AUC below 10 was associated with 5.9% lower costs (95% confidence interval of 0.9%-11.2%) with the largest reduction in patients undergoing CABG surgery only (7.8%). For the population with AUC above 10, reducing AUC to below 10 was predicted to reduce costs by $3080, ranging from $891-$4444 depending on the surgery group. **CONCLUSIONS:** Effective perioperative BP control in patients undergoing cardiac surgery has a significant impact on hospitalization costs.

CV2

USING AN INTERRUPTED TIME SERIES ANALYSIS TO ASSESS THE IMPACT OF VALSARTAN INITIATION ON MEDICAL COSTS FOR PATIENTS WITH HYPERTENSION

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OBJECTIVES: This study examines whether valsartan initiation is associated with a post-initiation reduction in medical costs among hypertensive patients. **METHODS:** A retrospective interrupted time series design was used with a large, US national claims database for the period of 2004–2008. Hypertensive patients who initiated valsartan between the ages of 20 and 63, and had continuous enrollment for 24-month pre- and 24-months post- valsartan initiation were selected. Patients' monthly medical costs were calculated based on individual claims. To detect a post-initiation reduction in the medical costs, interrupted time series models were developed with the following key covariates: valsartan initiation, initiation month, pre-initiation month, and post-initiation month. A similar time series model was used to forecast post-initiation medical costs for the same patients had they not initiated valsartan. The number of post-initiation months before the actual medical costs converged with the forecasted medical costs was assessed as the time needed to reach the cost-offset point. **RESULTS:** Patients (N = 18,269) had mean age of 53 at the valsartan initiation date, and 53% of them were female. The most common co-morbid conditions were dyslipidemia (52%), diabetes (24%), hypertension with complications (17%), and ischemic heart disease (13%). The time series model estimated that medical costs were increasing about $10 per month ($P < 0.01$) prior to valsartan initiation, and decreasing about $6 per month ($P < 0.01$) after the initiation. The actual medical cost reduction after valsartan initiation was statistically significantly lower ($P < 0.01$) than the forecasted medical costs after the 2nd month. Similar trend was also observed in hypertension-related medical costs. **CONCLUSIONS:** Hypertension patients experienced increasing monthly medical cost prior to valsartan initiation. However, after initiation, there was a statistically significant decrease in medical costs, which after only two months was significantly lower than the forecasted costs of the same patients had they not initiated valsartan.

CV3

EFFECT OF BIVALIRUDIN ON ECONOMIC OUTCOMES OF STEMI PATIENTS IN AN OBSERVATIONAL DATASET

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OBJECTIVES: Observational data provide an opportunity to assess drug efficacy in the real world. However, because treatment decisions may be based on prognosis, estimates of treatment effects obtained from observational data may suffer from "confounding by indication." To address this concern, we used a grouped-treatment approach to determine the impact of choice of anticoagulant on length of hospital stay (LOS) and cost in patients undergoing percutaneous coronary intervention (PCI). **METHODS:** We analyzed the Premier Perspective Database for all patients aged ≥18 years admitted to Premier hospitals with a diagnosis of ST-elevated myocardial infarction (STEMI) and ≥1 procedure code for PCI between Q12004 and Q12008 (N = 71,296). We constructed individual-level models of LOS and cost, similar to those in a conventional multivariate analysis, except that each individual's actual treatment variables were replaced with grouped-treatment variables (the proportion of patients receiving each treatment at the hospital/year in which treatment occurred). We used linear regression to assess the impact of the likelihood of treatment with bivalirudin or heparin ± a glycoprotein IIb/IIIa inhibitor on LOS and cost (in 2008$), controlling for other treatments (including stent use, other drug use, CABG); patient demographics, diagnosis, insurance status, physician specialty; and hospital region, size, teaching status. We calculated confidence intervals allowing for the clustering of errors at the hospital/year level. **RESULTS:** Bivalirudin treatment was associated with a reduction in LOS of 0.917 days (95% CI: −1.393, −0.441) and a reduction in cost of $4,554 (95% CI: −7,936, −1,172) compared to heparin+GPI. **CONCLUSIONS:** Increasing the proportion of a hospital's patients treated with bivalirudin was associated with a significant reduction in LOS and cost, compared to heparin+GPI. The estimated effects of bivalirudin from a grouped-treatment model were significantly larger than those from a conventional individual-level analysis, suggesting that confounding by indication may be important in this context.