

PLENARY SESSION 2

A RANDOMIZED CONTROLLED TRIAL OF COPAYMENT REDUCTIONS FOR BLOOD PRESSURE MEDICATION: THE COLLABORATION IN HYPERTENSION TO REDUCE DISPARITIES (CHORD) TRIAL K.G. Volpp¹; A. Troxel²; J. Long¹; S. Ibrahim³; D. Appleby⁴; J. Smith⁵; J. Jaskowiak⁶; P. Wang⁴; J.H. Holmes⁴; D. Frosch⁷; K. Armstrong⁸; M. Helweg-Larsen⁹; J. Doshi²; S. Kumanyika⁴; K. Enge⁹; R. Townsend⁴; N. Joshi¹⁰; S.E. Kimmel². ¹Center for Health Incentives, Leonard Davis Institute of Health Economics, University of Pennsylvania and CHERP, Philadelphia Veterans Affairs Medical Center, Philadelphia, PA; ²Center for Health Incentives, Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, PA; ³CHERP, Veterans Administration Hospital, Pittsburgh, PA; ⁴University of Pennsylvania, Phila, PA; ⁵Cheyney University, Cheyney, PA; ⁶University of Pennsylvania, Philadelphia, PA; ⁷UCLA, Los Angeles, CA; ⁸Center for Health Incentives, Leonard Davis Institute of Health Economics, University of Pennsylvania; CHERP, Philadelphia VA Medical Center, Philadelphia, PA; ⁹Dickinson College, Carlisle, PA; ¹⁰Pinnacle Health, Harrisburg, PA. (Tracking ID # 205306)

BACKGROUND: Nearly two-thirds of Americans with hypertension (HTN) have poorly controlled hypertension, which puts them at risk for substantial morbidity and mortality. Poor adherence to prescribed medication regimens is an important factor in poorly controlled hypertension. Value-based insurance designs, in which copayments are lowered for services of relatively high benefit, are garnering widespread attention as a way to improve adherence and patient outcomes. We undertook this study to examine whether lowering patient copayments for blood pressure medications among patients with poorly controlled hypertension significantly improved blood pressure control.

METHODS: We conducted two randomized trials of interventions to improve blood pressure control involving a total of 816 patients with poorly controlled hypertension from 3 Pennsylvania hospitals. In the first (COPAY ELIGIBLE, n=479), participants were randomly assigned to receive incentives equivalent to reductions in copayments from \$8 per medication per month to \$0 for each anti-hypertensive prescription filled, a computerized behavioral intervention (CBI), both copay reduction and CBI, or usual care. In the second, among patients who didn't pay copayments (COPAY EXEMPT, n=336) participants received rewards that effectively lowered copayments from \$0 per medication per month to negative \$8, a CBI, both copay reduction and CBI, or usual care. In each trial, individual participants were randomized evenly to the four arms with stratification by site, systolic blood pressure (<160, >=160), and income. The primary outcome was change in blood pressure 12 months post-enrollment, and the study was powered to detect a 10mm difference in systolic blood pressure between arms. This paper reports on the findings of the financial incentive interventions.

RESULTS: There were no significant interactions between the incentive interventions and the CBI interventions. Blood pressure decreased among all participants over the 12 months of the study, but there was no significant difference in results between the financial incentive groups and the control groups. Among patients in the COPAY ELIGIBLE study, systolic blood pressure within the incentive group dropped 13.2 mm on average, vs. 15.2 mm for the control group (difference = 2.0, [95% CI = -2.3 to 6.3], p=0.36.) The proportion of patients whose blood pressure was under control at 12 months post-enrollment was 29.5% in the incentive group vs. 33.9 in the control group (OR = 0.8; [95% CI = 0.5 to 1.3], p=0.36). Within the COPAY EXEMPT group, the results showed a mean 13.7 mm drop for the incentive group vs. a 10.0 mm decline for the control group (difference = -3.7 [95% CI = -9.0 to 1.6], p=0.17.) Blood pressure control was achieved by 35.6% of the incentive group vs. 27.7% of the control group (OR = 1.4, [95% CI = 0.8 to 2.5]; p=0.19.)

CONCLUSION: Among patients with poorly controlled blood pressure, neither financial incentives that effectively eliminated copayments for blood pressure medications or that paid patients for filling prescriptions improved blood pressure control. Reductions in copayments may be a less effective means of improving intermediate outcomes than had been anticipated.

MEDICARE SPENDING FOR PREVIOUSLY UNINSURED ADULTS J.M. McWilliams¹; E. Meara¹; A.M. Zaslavsky¹; J.Z. Ayanian². ¹Harvard Medical School, Boston, MA; ²Brigham and Women's Hospital, Boston, MA. (Tracking ID # 204701)

BACKGROUND: After acquiring Medicare coverage at age 65, previously uninsured adults use more health services than previously insured adults and report improvements in health trends. Medicare spending may be higher for previously uninsured adults with treatable conditions if poor disease control leads to irreversible complications before age 65 or persistently elevated clinical needs after age 65. Uninsured adults may also delay elective procedures until they gain coverage. However, the effect of uninsurance in the near-elderly population on subsequent Medicare spending has not been estimated with Medicare claims.

METHODS: Using the nationally representative Health and Retirement Study (HRS), we compared Medicare spending for beneficiaries ages 65-75 who were continuously insured (N=2951) or continuously or intermittently uninsured (N=1616) before age 65. Longitudinal survey data from 1992-2006 were used to assess coverage patterns and other sociodemographic and clinical characteristics before age 65. Linked Medicare claims data from 1996-2005 were used to assess utilization and spending after age 65. We used an inverse probability of treatment weighting technique to adjust for observed baseline differences between comparison groups and account for survey non-response that led to missing claims data. Using this method, we also adjusted for time-varying confounders such as health declines that could have caused or resulted from uninsurance before age 65. We estimated the contribution to differences in Medicare spending for previously uninsured and insured adults from hospitalizations for complications of cardiovascular disease or diabetes, joint replacements, and COPD exacerbations.

RESULTS: Adjusted annual total Medicare spending after age 65 was significantly higher for previously uninsured (\$4521) than previously insured (\$3589) adults (difference: \$932; P=0.04), particularly among adults with cardiovascular disease or diabetes (difference: \$1398; P=0.04). Descriptive plots suggested spending differences persisted through age 71 and diminished thereafter. Relative to other service types, differences in annual spending were largest for inpatient services (\$524; P=0.07). Previously uninsured adults with cardiovascular disease or diabetes were more likely to be hospitalized for related complications (adjusted annual rates: 7.3% vs 5.3%; P=0.04) and those with arthritis tended to be hospitalized more often for joint replacement surgery (2.4% vs 1.2%; P=0.08). Together these condition-specific admission rates accounted for 68.6% of the difference in total annual Medicare spending between all previously uninsured and insured adults. In contrast, previously uninsured adults who reported lung disease or active smoking tended to be hospitalized less often for COPD exacerbations than previously insured adults (1.0% v. 1.7%; P=0.08).

CONCLUSION: Adjusted Medicare spending was significantly higher for previously uninsured than previously insured adults, suggesting the costs of expanding coverage before age 65 may be partially offset by subsequent reductions in Medicare spending after age 65. Differences in spending were explained largely by complications of cardiovascular disease or diabetes and greater use of joint replacements, but not by exacerbations of COPD, a condition for which few treatments alter disease progression. These differences appeared to narrow after 7 years, suggesting persistent effects of being uninsured before age 65 that were eventually attenuated.