

Abstract Session G4: Health Policy/Social Justice

Physician Patient-Sharing Networks are Associated with Cost and Intensity of Care in US Hospitals

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BACKGROUND: Substantial variation exists in the cost and intensity of care received by patients treated by physicians affiliated with different US hospitals. There is currently no consensus on the mechanisms that underlie such marked variation in health care delivery across the US. Using measures from the discipline of network science, we assessed how the organization of patient-sharing networks of physicians affiliated with hospitals might contribute to this variation. We hypothesized that network measures reflecting poorer coordination of care within hospital-affiliated networks would be associated with higher costs and care intensity.

METHODS: We performed a cross-sectional analysis of Medicare administrative data from 2006 for patients in 51 hospital referral regions (HRRs), resulting in a sample of 61,461 physicians affiliated with 528 hospitals caring for 2.6 million Medicare patients. We constructed hospital-affiliated physician networks based on shared patients and measured aspects of the structure of these hospital networks including the median number of connections per physician and the relative centrality of primary care or specialist physicians in the hospital network. We then used multivariate linear regression to assess the relationship between network structural measures and total health care spending and care intensity (including both inpatient and ambulatory care) in the last 2 years of life for Medicare patients, controlling for a number of hospital characteristics.

RESULTS: The typical physician in an average-sized hospital was connected to 187 doctors for every 100 Medicare patients shared with other doctors. In larger hospitals, the typical physician was connected to 281 other doctors per 100 Medicare patients. An increase of one standard deviation (SD) in the median number of connections per physician was associated with a 17% increase in total Medicare spending, 17% more hospital days, 36% more ICU days, and 37% more specialist visits (all p

CONCLUSION: Hospital-affiliated physician network structure has a significant relationship with care patterns for Medicare patients. Hospitals with more specialist-focused networks and those with doctors who have higher numbers of connections to other physicians have higher costs and more intensive care. These results highlight the importance of physician relationship networks and provide support for the hypothesis that poorer coordination of care is associated with greater spending and care intensity.

Duty Hours Kevin Volpp¹; Judy Shea²; Dylan Small²; Mathias Basner²; Jingsan Zhu²; Laurie Norton²; Adrian Ecker²; Cristina Novak²; Lisa Bellini²; David Dinges². ¹Philadelphia VA; University of Pennsylvania School of Medicine and Wharton, Philadelphia, Pennsylvania ; ²University of Pennsylvania, Philadelphia, Pennsylvania . (Proposal ID # 10686)

BACKGROUND: The Accreditation Council for Graduate Medical Education (ACGME) recently released new duty hour standards that will restrict interns to working 16-hour shifts. This is a controversial set of new regulations that stemmed from a recent Institute of Medicine Report that suggested curtailing the duration of shifts for interns either by shortening them or through widescale use of mandatory naps for extended duty overnight shifts. Previous research has indicated that naps on extended duty shifts for interns have low adherence rates and do not succeed in significantly increasing amount slept while on call, suggesting this is not a viable policy solution. We undertook this study to determine whether a system of mandatory naps for interns was feasible and could result in significant increases in the amount slept while on extended duty overnight shifts.

METHODS: 98 intern months at the Philadelphia VA Medical Center (PVAMC) and 75 intern months on the oncology unit of the Hospital of the University of Pennsylvania (HUP) were randomly assigned to either receive a standard intern schedule, which involved extended duty overnight shifts of up to 30 hours, or a “mandatory nap” month, in which interns were given protected time from 1230-530 am in which they were expected to sign out their cell phones to a covering resident. The schedule was a residency programmatic initiative; study participants were asked to wear wrist watch actiwatches and complete sleep diaries. The primary outcome was mean hours slept during extended duty overnight shifts as measured by Actiwatch Spectrum[®] wrist activity monitors. Secondary outcomes included percentage of call nights with no sleep and mean hours slept during other nights of the call cycle. The analyses were done using an unadjusted intent-to-treat analyses testing for differences between the intervention and control groups at each of the two sites, analyzing each site as a separate trial. To account for the correlation among a participant’s multiple observations, all of the analyses used Huber-White robust standard errors with individual participants as the clusters.

RESULTS: Interns on mandatory nap rotations at both PVAMC and HUP had significantly higher amounts of mean sleep during the protected periods (PVAMC: 2.6 vs. 1.6 hours, p-value < 0.0001; HUP: 2.8 vs. 1.9 hours, p-value < 0.0001). Nap month participants were also significantly less likely to have call nights with no sleep (PVAMC: 12.5% vs. 26.9%, p-value < 0.0001; HUP: 11.1% vs. 17.1%, p-value 0.04). However, mean amount slept over the full call cycle was no different in the control and intervention groups (PVAMC 6.7 vs. 6.8 hours, p-value 0.50; HUP: 6.7 vs. 6.5 hours, p-value 0.19).

CONCLUSION: A mandatory nap intervention significantly increased mean amount slept during overnight call nights, which in the context of new ACGME regulations restricting duty hours could provide a useful alternative for programs seeking to comply with ACGME guidance on fatigue management for residents. However, overall mean sleep within each call cycle was unchanged, suggesting that while this approach could help with acute sleep deprivation it would be unlikely to address problems with chronic sleep deprivation among residents.

Effects of Medicare Prescription Drug Coverage on Non-drug Medical Spending J. Michael McWilliams¹; Alan M Zaslavsky¹; Haiden A Huskamp¹. ¹Harvard Medical School, Boston, Massachusetts . (Proposal ID # 10977)

BACKGROUND: The Medicare prescription drug benefit (Part D) has increased use of prescription drugs, decreased out-of-pocket spending for prescription drugs, and decreased cost-related non-adherence among elderly adults. The national effects of Part D on hospitalization rates and non-drug medical spending, however, have not been clearly defined.

METHODS: We used longitudinal survey and linked Medicare claims data from the nationally representative Health and Retirement Study to measure quarterly non-drug medical spending and utilization from 2004-2007 among 3,224 elderly beneficiaries reporting less generous prescription drug coverage (drugs partially or not at all covered) and 2,495 reporting more generous coverage (drugs mostly or completely covered) in 2004. To estimate effects of the implementation of Part D, we fitted generalized linear models comparing non-drug utilization and spending before and after 2006 by prior drug coverage. We estimated these effects for the entire cohort, for adults with drug-sensitive chronic conditions, and for adults with low incomes. For comparison, we conducted similar analyses for a control period from 2002-2005, prior to Part D implementation. Applying a similar analysis to biennial survey data, we compared changes from 2004-2008 in prescription drug coverage, out-of-pocket spending, and cost-related non-adherence for beneficiaries with less or more generous drug coverage in 2004. We then compared these differential changes to differential changes occurring in a control cohort from 2002-2004. Comparisons were adjusted for baseline sociodemographic and health characteristics, the complex survey design, repeated measures, survey non-response, and missing claims due to Medicare Advantage enrollment.

RESULTS: After the first quarter of 2006, spending on acute and post-acute care tended to be lower for beneficiaries with less generous prior drug coverage (-\$313/quarter; P=0.08) than was expected from preceding trends and changes in spending for beneficiaries with more generous prior drug coverage. Spending on acute and post-acute care after 2006 was significantly lower than expected for beneficiaries with drug-sensitive chronic conditions (-\$413/quarter; P=0.03) and low incomes (-\$781/quarter; P=0.01) who had less generous drug coverage in 2004. Hospitalization rates also tended to be lower than expected after 2006 for those with less generous prior drug coverage (-0.014/quarter; P=0.08). Spending on other non-drug services did not differentially change after 2006 for beneficiaries with less generous prior drug coverage (-\$4/quarter; P=0.97). In a control cohort from 2002-2005, spending on acute and post-acute care did not differentially change after the first quarter of 2004 for beneficiaries with less generous drug coverage in 2002 (\$19/quarter; P=0.90). Beneficiaries who had less generous drug coverage in 2004 reported better drug coverage (+20.5 percentage points with more generous coverage; P<0.001), lower out-of-pocket spending on drugs (-\$152/month; P=0.002), and less cost-related non-adherence (-2.4 percentage points; P=0.04) than was expected in 2008 in the absence of Part D.

CONCLUSION: The implementation of Medicare Part D was associated with lower spending on acute and post-acute care for beneficiaries with less generous drug coverage before 2006. These benefits were concentrated among those with drug-sensitive chronic conditions, for whom increased use of prescription drugs might prevent costly complications, and among those with low incomes, who were less likely to be able to afford prescribed medications before 2006 and more likely to qualify for subsidized Part D coverage without a coverage gap. Hence, the costs of provisions in the Patient Protection and Affordable Care Act to reduce cost-sharing in the doughnut hole of standard Part D coverage may be partially offset by reduced Medicare spending on Part A services for these groups. Moreover, these findings would support policies incentivizing Part D plans to design drug coverage and formularies to minimize Part A spending.

Impact of Socioeconomic Adjustment on Physician Cost Profiles Mehrotra Ateev¹; Justin Timbie².

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BACKGROUND: Many health plans use physician cost profiles in their value-based purchasing strategies, and CMS will soon begin providing individualized cost profiles to physicians participating in the Medicare program. Currently, these profiles do not take into account differences in patients' socioeconomic status (SES). Some physicians and policy makers have expressed concern that physicians who provide care to socioeconomically disadvantaged populations will appear to be more costly for reasons that are beyond their control. With these concerns in mind, Congress called for Medicare to investigate the use of socioeconomic adjustments to cost profiles in the Affordable Care Act. Our goal in this study was to investigate the relationship between patient SES and the cost of care, and whether adjustment for SES would impact a physician's cost profile.

METHODS: Retrospective data analysis of medical claims. Our claims database comprised all professional, inpatient, other facility, and pharmaceutical claims for calendar years 2004 and 2005 from commercial health plans in Massachusetts, including claims from managed care, PPO, and indemnity product lines. Combined, the health plans enrolled the majority of Massachusetts residents with commercial health insurance, or 2.8 million enrollees. From these claims we created physician cost profiles and focused on the costs of care for four representative conditions, hypertension, hyperlipidemia, asthma, and diabetes. Because patient-level measures of SES are not present in claims data, we used SES indicators from the 2000 Census measured at the zip code tabulation area (ZCTA). We examined the association with these area-level SES indicators with costs and compared physician cost profiles with and without adjustment for SES.

RESULTS: Our analyses included 13,867 physicians across a range of specialties with a median caseload of 48 patients per physician. Across all conditions, after adjusting for a patient's severity of illness and physician specialty, area-level household income was positively associated with cost per episode of care. For every 1 percent increase in household income across areas (ZCTAs), costs increased by 4.1 percent on average, ($p < .001$). However, there was heterogeneity in the relationship between SES and cost by condition. For example, the cost of care for asthma and hypertension were higher among those with lower household income ($p < .001$). When we classified physicians according to quintiles of their cost profiles with and without adjustment for SES, we found that fewer than 4 percent of physicians changed quintiles following adjustment. Findings were similar across a range of physician specialties.

CONCLUSION: While socioeconomic status may be an important predictor of cost for some conditions, adjusting for SES does not appear to significantly influence a physician's overall cost profile. Whether these findings are generalizable outside of Massachusetts or whether SES data for smaller areas are required to conclusively determine the need for SES adjustment are worthy of further study. These initial results suggest that failing to adjust for SES may not adversely impact the cost profiles of physicians who care for disadvantaged populations.

Reducing Disparities in Accessing Primary Care: The Role of Health Centers Quyên Ngo-Metzger¹; Leiyu Shi²; Seiji Hayashi¹; Charles Daly¹; Ravi Sharma¹; Robert Politzer³. ¹Health Resources and Services Administration, Rockville, Maryland ; ²Johns Hopkins School of Public Health, Baltimore, Maryland ; ³Consultant, Columbia, Maryland . (Proposal ID # 11030)

BACKGROUND: Disparities in access to primary care in different types of health care settings are found to be due to race/ethnicity, health insurance, income, and health needs. The purpose of this study is to examine the experience of primary care by patients seen at health centers (HCs) compared to mainstream healthcare settings such as physician offices (POs) HMOs, and hospital outpatients (HOs). The focus is on racial/ethnic (predisposing), health insurance, income (enabling) and health (need) disparities, and the role of the healthcare system in overcoming these.

METHODS: Comparative effectiveness study based on cross-sectional analyses of two nationally representative surveys. For patients seen at HCs, the 2009 Health Center Patient Survey was used. The survey, sponsored by the Health Resources and Services Administration, has a probability sample of 4,562 patients representing over 13 million HC medical patients seen during 2008. For patients seen at other healthcare settings, the 2008 National Health Interview Survey was used. To reflect the design of the Health Center Patient Survey, only respondents with at least one physician visit in mainstream healthcare settings (n=21,545) were included. Similar measures of primary care accessibility (e.g., usual source of care "USC", unable or delayed in getting medical care, unable to get dental care, unable to get mental care, unable to get prescription drugs) were used in both analyses. In addition to race, income, insurance, and health status, other covariates in the multivariate analyses were age, gender, education, marital status, employment, disability, and residential region.

RESULTS: Patients seen at HCs experienced comparable or better accessibility to primary care compared to other settings, e.g., 96% of HC patients identified a USC compared to 85% for patients nationally. Whereas there were no racial/ethnic and health-status related disparities and limited insurance-related disparities in HC settings, significant disparities (racial/ethnic, insurance, and income) existed in other settings. For example, in terms of racial/ethnic disparities, nationally 17% African Americans and 29% Hispanics did not have a USC, compared to 12% whites (p<.01). 12% African Americans and 11% Hispanics were unable to get needed medical care compared to 8% whites (p<.01). Nationally 49% uninsured did not have a USC, compared to 9% privately-insured (p<.01). 27% uninsured were unable to get needed medical care compared to 4% privately-insured (p<.01). In terms of income disparities, nationally 24% low-income patients did not have a USC, compared to 10% higher-income patients (p<.01). 15% low-income patients were unable to get needed medical care compared to 4% higher-income patients (p<.01). These national-level disparities (two-fold for racial/ethnic groups and three-plus-fold for insurance and income groups) persisted after controlling for other patient sociodemographic characteristics.

CONCLUSION: Patients seen at HCs report comparable or better accessibility to primary care compared to other healthcare settings. Unlike other healthcare settings where significant disparities existed in primary care quality among patients with different racial/ethnic, insurance, and income groups, few disparities were noted among HC patients. As safety-net providers for uninsured and vulnerable populations, HCs provide high-level accessibility to primary care and overcome health disparities.

Cognition and Choice of Traditional Medicare or Medicare Advantage J. Michael McWilliams¹; Christopher C Afendulis¹; Thomas G McGuire¹; Bruce E Landon¹. ¹Harvard Medical School, Boston, Massachusetts . (Proposal ID # 11006)

BACKGROUND: Since the Medicare Modernization Act of 2003, increased payments to Medicare Advantage (MA) plans have been associated with a dramatic proliferation in the number of plans available to Medicare beneficiaries and more generous benefits for MA enrollees. Too many or overly complex insurance options may result in suboptimal choices by Medicare beneficiaries. In particular, those with cognitive deficits may have difficulty identifying the most valuable option in their enrollment decisions.

METHODS: For 6,672 participants from the nationally representative Health and Retirement Study, we analyzed survey data, linked Medicare enrollment data, and county-level administrative data on MA plans from 2004-2007, to determine: 1) if the availability of more plans has increased or decreased enrollment in MA; and 2) if beneficiaries with lower cognitive functioning have been less responsiveness to expanded benefits in MA. Logistic regression was used to estimate effects of within-county increases in the number of plans available and generosity of plans' benefits on beneficiaries' enrollment in MA or traditional Medicare. Generosity of benefits was measured as the expected monthly out-of-pocket costs in MA for a standardized population of beneficiaries, averaged across all plans available in a given county and year. Results were compared by cognitive functioning, which was assessed in surveys by a validated instrument modeled after the Min-Mental State Examination. All analyses were adjusted for sociodemographic and health characteristics of participants, county fixed effects, the incomplete linkage to enrollment files, and the complex design of the survey.

RESULTS: The mean number of MA plans increased twofold or more each year from 2004 to 2007 in U.S. counties with at least 1 plan. Increases in available MA plans up to 15 were associated with significant increases in MA enrollment ($P=0.004$), but increases between 15-30 plans were not ($P=0.84$). Increases above 30 plans were associated with significantly decreased enrollment in MA ($P<0.001$). By 2007, over 95% of study participants faced lower expected out-of-pocket costs in MA than in traditional Medicare with Medigap coverage, based on county-level averages. Decreased expected out-of-pocket costs in MA (more generous benefits) were associated with increased MA enrollment among participants with high cognitive functioning ($P=0.02$) but not among participants with low cognitive functioning ($P=0.56$).

CONCLUSION: Medicare beneficiaries were less likely to enroll in MA when faced with numerous choices. Those with lower cognitive functioning were less responsive to the generosity of MA benefits in their enrollment decisions. Simplifying choice in MA could improve beneficiaries' decisions, strengthen value-based competition among plans, and extend the benefits of choice to seniors with impaired cognition. In particular, the role of insurance exchanges established by the Patient Protection and Affordable Care Act could be expanded to serve Medicare beneficiaries and MA plans.