

effective interventions targeted at reducing fragmentation. High care fragmentation is associated with unnecessary procedures and testing, increased emergency department visits and hospitalizations, and increased medical costs.

**Study Design:** This study was conducted in the context of the Comprehensive Primary Care Plus Model (CPC+), a large primary care redesign initiative. We used Medicare claims data from January through December 2018 on Medicare fee-for-service (FFS) beneficiaries attributed to primary care practice sites participating in CPC+ and to comparison practices that were similar at baseline. We used hierarchical linear models to predict the likelihood of a beneficiary receiving highly fragmented care, defined as having a fragmentation score (measured by the reversed Bice-Boxerman Index)  $\geq 0.85$ . We used an extensive set of explanatory variables at each level (74 total variables) and group-level random intercepts to understand how characteristics at each level help explain variation in fragmentation. We estimated separate models for the two CPC+ transformation/payment tracks.

**Population Studied:** 3,541,136 Medicare FFS beneficiaries attributed to 26,344 primary care physicians in 9300 primary care practice sites.

**Principal Findings:** The three sets of explanatory variables (beneficiary, physician, and practice site) together only explained about 5 percent of the variation in the likelihood of high care fragmentation. Unobserved differences between primary care physicians and between primary care practice sites together accounted for only 4 percent of the variation. Instead, more than 91 percent of the variation in fragmentation consisted of unobserved residual variance. We identified several characteristics of beneficiaries (age, reason for original Medicare entitlement, and dual status), physicians (gender and measures of comprehensiveness of care), and practice sites (size, being part of a system/hospital, and census region) that had small associations with high fragmentation. Findings were similar by track.

**Conclusions:** Although we identified a number of characteristics that predict high care fragmentation, most of the variation in fragmentation was not explained by observed beneficiary, primary care physician, or primary care practice characteristics. This suggests other providers and beneficiaries' preferences may be important factors.

**Implications for Policy or Practice:** Our findings show that primary care physician and practice site characteristics explain only a small share of variation in care fragmentation. Behaviors of other health care providers not captured by regional controls, as well as unmeasured patient preferences, are likely to be important predictors of high care fragmentation.

One implication of these findings is that interventions focused on primary care need to be sizable and targeted to decrease fragmentation. Further, future health care innovations might need to expand their focus beyond primary care to consider how specialists and hospitals work with primary care, ways to modify beneficiaries' self-referral behavior, and the effect of market factors on the primary care practice environment. In addition, fully understanding the factors that drive fragmentation (and opportunities to reduce it) will require more data on specialists and their practices.

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## MEDICARE

### Impact of Medicare Eligibility on Informal Caregiving for Surgery and Stroke

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**Research Objective:** Over 40 million older Americans rely on informal care (unpaid assistance for personal care such and instrumental support, including toileting, bathing, and shopping). Prior work illustrates 68–230% greater spending on post-acute care after surgery for Medicare beneficiaries compared to older commercial insurance enrollees. Such enhanced access to post-acute care may reduce the need for family and friend caregiving support for rehabilitation following acute medical events. While use of informal care is substantial among older Americans, little is known about informal support for patients after acute medical events, and how formal post-acute care influences its use.

**Study Design:** We used 1998 to 2018 Health and Retirement Study (HRS) data to assess changes in weekly hours of informal care received by individuals experiencing acute events before and after Medicare eligibility. We created two similar cohorts of individuals near the Medicare eligibility age: pre-Medicare, or individuals ages 59–66 and not covered by Medicare; and Medicare, or individuals ages 67–74. We used a threshold of 67, rather than 65, for the Medicare cohort to account for the two-year lookback period used in HRS survey questions. The cohorts were matched using inverse probability treatment weights. A regression discontinuity design assessed three types of caregiving – the proportion of respondents receiving care, intensity of care among care recipients, and care intensity among all respondents – before and after Medicare eligibility. We estimated generalized linear models with a log link and gamma distribution that regressed informal care on Medicare status, a centered age variable, and an interaction between Medicare status and centered age. Sensitivity analyses included stratification by surgery type and by sex.

**Population Studied:** 4264 Health and Retirement Study participants near the age of Medicare eligibility in one of three self-reported acute medical cohorts: stroke, heart surgery, or joint surgery.

**Principal Findings:** Among near-retirement individuals, 2031 (47.6%) had a stroke, 1038 (24.3%) underwent heart surgery, and 1038 (28.0%) underwent joint surgery. Of the 937 (22.3%) of patients who reported receiving care from an informal caregiver, average care measured 34.0 (SD: 49.2) weekly hours. Mean (SD) weekly informal caregiving hours were 7.5 (27.0) overall, and 12.1 (34.7), 3.8 (18.5), and 2.9 (14.1) for stroke, heart surgery, and joint surgery patients, respectively. In adjusted analyses, the proportion of stroke patients receiving informal care decreased from 39.5% to 28.6% (or by 28%) and the

average weekly amount of care decreased from 21.0 to 10.3 hours (or 51%) after Medicare enrollment. Non-significant decreases were observed for the other medical cohorts. There was a non-significant average decrease of 22.8 hours (or 40%) in the intensity of care received by men after one of three events.

**Conclusions:** Access to Medicare coverage was associated with a 51% reduction in informal care received by older Medicare stroke patients, potentially by increasing access to post-acute services.

**Implications for Policy or Practice:** Post-acute care is increasingly targeted for cost savings under Medicare policies, which may restrict access to post-acute care and rehabilitation, impacting demand for informal care for older adults with stroke.

## Eligible but Not Enrolled: Consequences of Forgoing Prescription Drug Subsidies Among Low-Income Medicare Beneficiaries with Diabetes

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**Research Objective:** To estimate take-up of the Part D Low-Income Subsidy (LIS) among Medicare beneficiaries with diabetes, and to examine differences in out-of-pocket costs and prescription drug use between enrollees and LIS-eligible non-enrollees. The LIS lowers prescription drug costs for Medicare beneficiaries with incomes  $\leq 150\%$  of the Federal Poverty Level (FPL), and caps out-of-pocket costs for beneficiaries with incomes  $\leq 135\%$  of FPL. Although a number of recent policy proposals seek to address rising drug costs, the LIS itself remains underutilized. The value of forgoing this benefit among chronically ill beneficiaries has not previously been studied.

**Study Design:** We used data from the Health and Retirement Study (HRS) to estimate take-up of the LIS among Medicare beneficiaries with diabetes. Using propensity score-weighted analyses, we compared out-of-pocket costs, prescription drug use, and cost-related drug non-adherence among LIS enrollees and eligible non-enrollees. We stratified the analyses according to whether respondents' income was  $\leq 100\%$  vs.  $>100\%$  to  $\leq 150\%$  of FPL because of differences in the generosity and take-up of Medicaid benefits above vs. below 100% of FPL, and because individuals with Medicaid automatically receive the LIS.

**Population Studied:** Community-dwelling HRS respondents surveyed biennially between 2008–2016 who were enrolled in Medicare Part D, had an established diagnosis of diabetes, and were eligible for the LIS (income  $\leq 150\%$  FPL and assets below LIS limit).

**Principal Findings:** Among Medicare beneficiaries with diabetes, 56.9% of those with incomes  $>100\%$  to  $\leq 150\%$  of FPL received the LIS, while 90.3% of those with incomes  $\leq 100\%$  received the LIS,

reflecting automatic enrollment from Medicaid. Based on these take-up rates, we estimate that 322,746 LIS-eligible individuals with diabetes do not enroll in the LIS annually. For those with incomes  $>100\%$  to  $\leq 150\%$  of FPL, compared to LIS enrollees, eligible non-enrollees incurred higher annual out-of-pocket drug spending (\$518,  $p < 0.001$ ), had 20% fewer fills for diabetes, hypertension, and hyperlipidemia prescription drugs ( $p = 0.003$ ), and were 9 percentage points more likely to report skipping drugs due to cost ( $p = 0.04$ ).

**Conclusions:** A substantial proportion of Medicare beneficiaries with diabetes are eligible for but not enrolled in the LIS. Low take-up was concentrated among beneficiaries with income  $>100\%$  to  $\leq 150\%$  of FPL. Forgoing the LIS was associated with higher out-of-pocket costs and cost-related non-adherence, and lower use of medications used to treat chronic conditions. Our findings demonstrate the extent to which out-of-pocket costs may be reduced, and use of chronic disease medications increased, if a higher proportion of LIS-eligible Medicare beneficiaries receive this benefit.

**Implications for Policy or Practice:** Proposals to lower out-of-pocket drug costs for Medicare beneficiaries often overlook the fact that existing prescription drug subsidy programs are underutilized. Because the LIS reduces cost sharing for all Part D covered drugs and caps annual out-of-pocket costs for most recipients, increasing LIS take-up would likely provide better financial protection for seniors with chronic conditions than a flat subsidy or price caps limited to certain drugs. Policies to streamline or automate LIS enrollment for low-income Medicare beneficiaries could help to mitigate the impact of rising drug costs in this vulnerable population.

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## Patient-Reported Outcomes from the Comprehensive Care for Joint Replacement Evaluation

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**Research Objective:** The Comprehensive Care for Joint Replacement (CJR) model is intended to encourage participant hospitals to reduce Medicare payments by coordinating care with the physicians, post-acute care (PAC) providers, and other providers involved in an episode of care for a lower extremity joint replacement (LEJR), which comprises the surgery plus the services provided in the 90 days after hospital discharge. Previous studies have documented reductions in institutional PAC attributable to the model.<sup>1</sup> The shift towards less intensive PAC could affect patient experiences and recovery. We