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# Spending On Postacute Care After Hospitalization In Commercial Insurance And Medicare Around Age Sixty-Five

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**ABSTRACT** Postacute care costs are the primary determinant of episode spending around hospitalization. Yet there is little evidence that greater spending on postacute care improves readmission rates or functional recovery. Recent Medicare payment reform evaluations have suggested that postacute care spending is responsive to episode-based incentives. However, it remains unknown whether Medicare payment policies are responsible for excess postacute care spending, compared with that of commercial payers. In a population-based, statewide collaborative of Michigan hospitals, we used regression discontinuity design among propensity-weighted, age-adjusted cohorts to compare postacute care spending between patients with commercial insurance and those with Medicare around age sixty-five. Spending was 68–230 percent greater among fee-for-service Medicare beneficiaries than among similar commercially insured people across varied medical and surgical conditions. Despite greater spending, there were no differences in readmission rates. These findings suggest that postacute care utilization is highly sensitive to payer influence, and there may be an opportunity for additional savings in Medicare without sacrificing quality.

Spending on postacute care after hospitalization exceeds \$60 billion per year in Medicare alone.<sup>1</sup> It is growing at a faster rate than inpatient spending,<sup>2</sup> may exceed spending on the acute hospitalization itself,<sup>1</sup> and is the primary predictor of differences in overall episode costs.<sup>3–5</sup> Hospitals have used postacute care to decrease length-of-stay and replace inpatient care with home health or skilled nursing care.<sup>6,7</sup> Postdischarge care is increasingly being employed to prevent readmissions, with the advent of Medicare's Hospital Readmissions Reduction Program.<sup>8,9</sup> However, there is little evidence that the increase in postacute care has improved outcomes after discharge.<sup>6,10,11</sup> In recent federal bundled payment programs for hospital care, reductions in postacute care spending were hospitals'

most common response to Medicare's episode-based reimbursement incentives.<sup>12–14</sup> These reductions have been achieved without exacerbating readmissions, emergency department use, or mortality.<sup>13</sup> Thus, there may be significant opportunities for additional savings through reductions in excess postacute care spending.

Whether the magnitude of savings seen in bundled payment programs can be extended further is unknown. Additional opportunities for savings could be identified in Medicare by comparing its reimbursement with that of other payers.<sup>15</sup> In traditional fee-for-service reimbursement, public insurers' payment policies exert limited control over expenditures, while commercial insurance often places far more stringent controls on use.<sup>16–19</sup> Payer-specific differences in postacute care spending among clinically similar in-

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dividuals could thus identify discretionary spending amenable to control through coverage design. However, the influence of insurance type on postacute spending choices has been largely unmeasured. Instead, most studies focus on single payers with fixed approaches to reimbursement—most commonly, fee-for-service Medicare.<sup>3,5,20</sup>

In this study we compared postacute care spending among Medicare beneficiaries in Michigan and clinically similar individuals approaching Medicare eligibility age who were insured by the most common commercial insurance program in the state. We balanced the characteristics of patients older and younger than age sixty-five by excluding those least likely to have been commercially insured before age sixty-five and then applying a regression discontinuity design<sup>21</sup> among propensity-weighted cohorts<sup>22</sup> to isolate the changes in spending that occur around age sixty-five. With these analyses we evaluated two questions critical to quantifying potential excess spending in Medicare: Do the use of and spending for postacute care differ between commercial insurance and Medicare? And because prevention of readmissions has been cited as a potential benefit of postacute care, do differences in spending influence post-discharge quality, as measured by readmissions?

## Study Data And Methods

**DATA SOURCE AND STUDY POPULATIONS** This study included six clinical cohorts from the Michigan Value Collaborative, a statewide consortium of seventy-six acute care hospitals and Blue Cross Blue Shield of Michigan (BCBSM). The collaborative's data set includes complete claims for all services within ninety days after hospital discharge for more than thirty defined conditions, among patients insured by either the BCBSM preferred provider organization (PPO) or fee-for-service Medicare. BCBSM is the dominant private payer in Michigan, covering about a third of the state's population. In combination, Medicare and BCBSM PPO account for a majority of the population.

We included patients ages 60–64 who were insured by BCBSM PPO and fee-for-service Medicare beneficiaries ages 65–69 in 2012–16 from the cohorts of patients with one of three medical conditions—acute myocardial infarction (AMI), congestive heart failure (CHF), and stroke—or one of three surgical conditions—coronary artery bypass grafting (CABG), total hip replacement (THR), and colectomy. These conditions were chosen because they are common causes for hospitalization among people in their sixties, entail varied use of and spending on postacute

care, and are targeted in emerging value-based reimbursement programs. Our inclusion and exclusion criteria are detailed in online appendix supplement 1.<sup>23</sup> In short, we excluded patients ages 64.75–64.99, as their ninety-day episode could include the transition from BCBSM to Medicare coverage upon turning age sixty-five, and patients ages 65.00–65.49, as they did not have six months of prior eligibility for Medicare for baseline spending adjustment. These exclusions also served to reduce bias in the regression discontinuity design that could have resulted from the onset of new Medicare coverage for people right at age sixty-five.<sup>24</sup>

To improve the comparability between groups, we excluded patients from the Medicare cohort of people older than age sixty-five who were unlikely to have been previously commercially insured because they met criteria for eligibility for Medicaid or Medicare before age sixty-five. A detailed enumeration of excluded patients is in appendix supplement 2.<sup>23</sup> Of the 37,359 patients across the six condition cohorts, we excluded 8,144 (22 percent) patients enrolled in Medicare who had disability or end-stage renal disease as either the original or the current reason for entitlement, 2,813 (8 percent) patients dually eligible for Medicare and Medicaid, and 774 (2 percent) others with billing codes that indicated end-stage renal disease. Thus, the final sample consisted of 25,628 patients. Exclusion due to disability or renal disease was more common in the medical than the surgical conditions, which likely reflected the association between chronic medical conditions, multimorbidity, and disability before age sixty-five among those admitted to the hospital for these reasons. To account for residual differences due to the Medicare patients' potentially representing a mix of people previously insured by BCBSM and those who had been covered by other private payers or Medicaid or who had been uninsured, we performed propensity weighting (described below).

**POSTACUTE CARE USE AND SPENDING** We divided postacute care services into four categories—home health, skilled nursing facility (SNF), inpatient rehabilitation, and outpatient rehabilitation—according to a previously validated algorithm.<sup>25</sup> We chose ninety-day episodes to align with the design of federal programs. We included all hospital payments for readmissions initiated within ninety days of discharge from the condition-defining admission, even when hospital stays extended beyond that time window.<sup>20</sup>

To focus on differences in use of postacute care services, rather than on differences in price, we price-standardized payments using algorithms developed by the Dartmouth Atlas of Health Care<sup>26</sup> and employed in previous work.<sup>3,20</sup> The

full pricing and adjustment approaches employed in the Michigan Value Collaborative are in appendix supplement 3.<sup>23</sup>

**STATISTICAL ANALYSES** We balanced observable age-adjusted characteristics between commercially insured patients and Medicare beneficiaries using inverse probability of treatment weighting.<sup>22,27</sup> We fit a multivariable logistic regression model that predicted the likelihood of being in the commercially insured cohort, based on geographic location, patient demographics, and Hierarchical Condition Categories. We then compared patient characteristics in each condition cohort before and after inverse probability of treatment weighting adjustment. Standardized differences less than 0.1 after adjustment suggest good covariate balance<sup>27</sup> and suggest that remaining differences in use of or spending for postacute care are unlikely to be driven by residual differences in patient characteristics or clinical outcomes.

To assess relationships between insurance type and spending for postacute care, we examined both the use of care (the proportion of patients using the service type) and the intensity of spending (price-standardized, risk-adjusted payments among patients who use the service), in a regression discontinuity design.<sup>21,28</sup> This design measured the change in predicted spending that is due solely to difference in insurance for patients at age sixty-five. We modeled outcomes as a function of age, insurance type, and an interaction between age and insurance type (which allowed the effect of age to differ between people ages 60–64 and those ages 65–69), and we tested the effect of insurance. We also evaluated models without the age interaction and with linear and quadratic effects of age, as recommended by Robin Jacob and colleagues.<sup>28</sup> The details of propensity-based weighting, full model specifications, and results from alternative specifications are in appendix supplement 4.<sup>23</sup>

As a sensitivity analysis to exclude the possibility that average predicted differences were driven by a small share of very high spending outliers, we repeated the regression discontinuity analyses using quantile regression to estimate and compare spending at the twenty-fifth, fiftieth, and seventy-fifth percentiles. The tabular and graphic results of the quantile regression analyses are in appendix supplement 5.<sup>23</sup>

**LIMITATIONS** Our study had several limitations. First, we might not have completely balanced patient characteristics, because BCBSM and Medicare patients differ by definition—at least by age. BCBSM is the dominant private payer in Michigan, and thus many of the Medicare beneficiaries were insured by BCBSM before age sixty-five. Still, Medicare enrollees not only

came from the BCBSM population but also included the uninsured and those who had been covered by Medicaid or by other commercial payers. In addition, some BCBSM-insured patients might have gone on to enroll in Medicare Advantage plans, so there could be other systematic differences in the samples. For example, these differences could exaggerate differences between Medicare and BCBSM patients if more low-utilizing patients with BCBSM PPO coverage went on to Medicare Advantage plans. The groups could also differ in their social support and living arrangements in ways that are not measured in administrative claims. Nevertheless, the exclusions, propensity weighting, and regression discontinuity approaches served to homogenize the two cohorts and reduce the influence of age differences. Moreover, the actual differences in measured health profiles of patients around the Medicare eligibility threshold are generally observed to be small.<sup>29</sup> And because the regression discontinuity approach focuses sharply on the discontinuity right at the transition age of sixty-five, the influence of age differences on social supports or clinical characteristics should be negligible. Finally, because BCBSM PPO and fee-for-service Medicare are both relatively generous in their reimbursement and pricing, any differences in utilization are likely smaller than we would have seen in comparisons between BCBSM and other public payers or between BCBSM patients and uninsured people.

Second, the regression discontinuity design evaluated discontinuous changes in outcomes at the transition at age sixty-five and might not be representative of differences at more disparate ages. The regression discontinuity approach assumed that in the absence of our national Medicare age eligibility cutoff, age-related trends in spending on postacute care would otherwise continue uninterrupted at the threshold. Provided that this assumption holds, this approach enables a strong analytic design, most closely isolating the coverage change from other differences between cohorts.

Third, our results were limited to the payers, conditions, and geographic region we studied. However, BCBSM is the most common private payer in Michigan, and BCBSM PPO and fee-for-service Medicare together cover the majority of the state's population. Furthermore, the six clinical cohorts we examined represent a wide diversity of common medical and surgical care in hospitals. They are highly prevalent among people in their sixties, and they are central to a variety of emerging value-based purchasing initiatives.

Fourth, regional differences in commercial markets, prices, or competition could affect

the generalizability of findings from Michigan to the rest of the United States. The average postacute care spending estimates for Medicare beneficiaries in this study were actually somewhat lower than national estimates reported in our previous work<sup>5,30,31</sup> and that of others,<sup>12,14,32</sup> which suggests that the higher spending we observed in Medicare was not unique to Michigan. Rather, Medicare estimates in our study were lower because of the age limits, exclusions, and propensity weighting we employed to make the Medicare beneficiaries more comparable with commercially insured people younger than age sixty-five. National estimates of postacute care spending in commercial insurance are not available, but given the approaches we used to balance the groups, even the large differences we observed may have underestimated actual differences in spending.

Finally, readmissions are just one possible measure of quality associated with postacute care. Using this data set, we could not assess functional recovery, patient satisfaction, or other outcomes. However, as hospitals have turned to postacute care providers to aid in preventing readmissions, especially in the setting of the Hospital Readmissions Reduction Program, a lack of association between postacute care spending and readmissions would call into ques-

tion the clinical efficacy of additional postacute care spending.

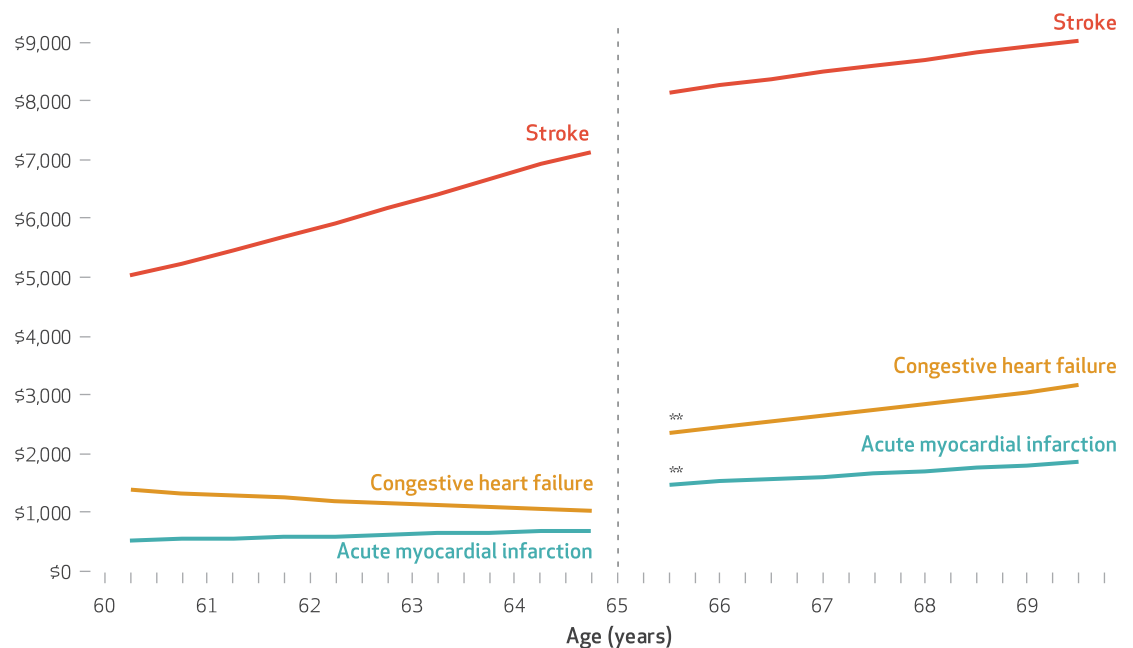
## Study Results

**PATIENT CHARACTERISTICS BY PAYER** Weighted differences in the baseline characteristics of patients in the cohort of people ages 60–64 with commercial insurance and those in the cohort of people ages 65–69 with Medicare were minimal, as shown in appendix supplement 4, table 3.<sup>23</sup> Other than age, there were no statistically or clinically significant differences between the weighted patient groups in any of the conditions, which suggests good balance.

**TOTAL SPENDING ON POSTACUTE CARE** For five of the six conditions, there was a significant increase in predicted price-standardized spending for patients around age sixty-five, as shown in exhibits 1 and 2 (for detailed regression discontinuity plots for each condition, see the figure in appendix supplement 4).<sup>23</sup> Across these conditions, the incremental increase in Medicare spending over that of commercial coverage ranged from 68 percent to 230 percent. For patients with AMI, for example, the additional predicted spending after hospitalization for a sixty-five-year-old in Medicare was \$703—an incremental 98 percent increase over that predicted

### EXHIBIT 1

Total postacute care spending for selected medical conditions, by age, 2012–16

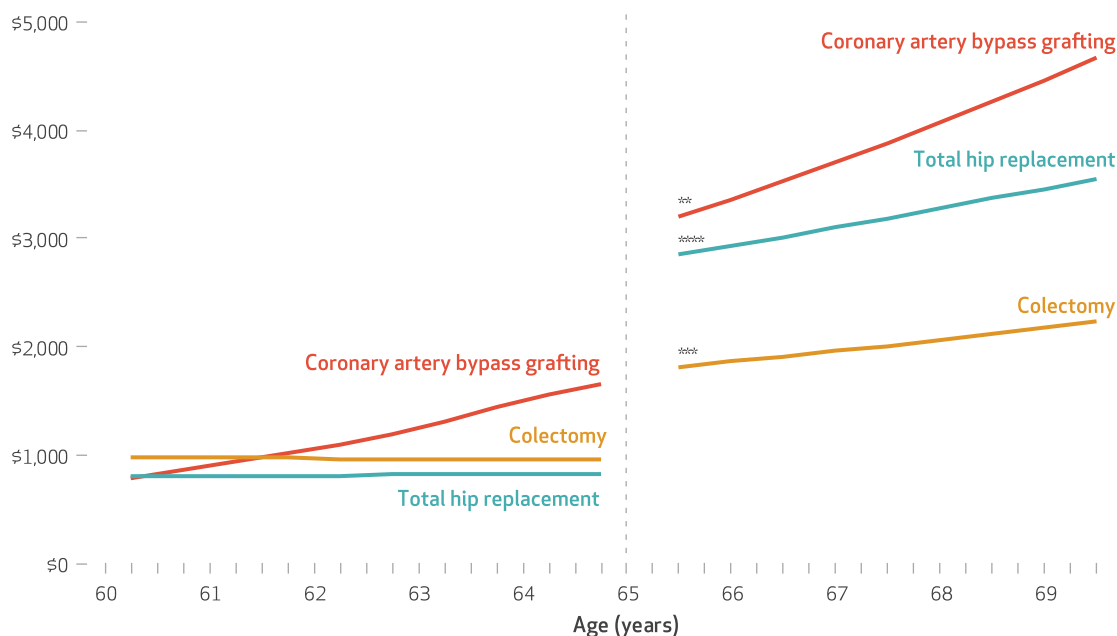


**SOURCE** Authors' analysis of fee-for-service Medicare and Blue Cross Blue Shield of Michigan preferred provider organization claims data from the Michigan Value Collaborative. **NOTES** The spending was price standardized. Spending at age sixty-five is not shown. \*\* $p < 0.05$



**EXHIBIT 2**

**Total postacute care spending for selected surgical conditions, by age, 2012-16**



**SOURCE** Authors' analysis of fee-for-service Medicare and Blue Cross Blue Shield of Michigan preferred provider organization claims data from the Michigan Value Collaborative. **NOTES** The spending was price standardized. Spending at age sixty-five is not shown. \*\* $p < 0.05$  \*\*\* $p < 0.01$  \*\*\*\* $p < 0.001$

for a sixty-five-year old with commercial insurance (exhibit 3). The only condition for which predicted total spending was not significantly greater at age sixty-five was stroke (which had an incremental increase of \$628).

The full results of the regression discontinuity analyses are in exhibits 3 and 4. For example, in AMI, the expected average spending of \$714 indicates the predicted average total spending for a BCBSM patient just under age sixty-five, and the adjusted discontinuity of \$703 is the predicted average additional spending expected for a Medicare beneficiary just over age sixty-five, compared with the BCBSM baseline (exhibit 3). To understand the sources of differences, we further broke down total price-standardized spending into its components: likelihood of any use, quantity of spending among users (intensity), and use and intensity of each care subtype (exhibit 4).

**LIKELIHOOD OF USE AND INTENSITY OF SPENDING ON POSTACUTE CARE** After colectomy and THR, Medicare beneficiaries were significantly more likely than patients with commercial insurance to use any postacute care, and the largest absolute difference was in the use of home health (12.0 percent for colectomy and 14.4 percent for THR) (exhibit 4).

The main source of spending differences for most conditions was the intensity of spending

among patients using any postacute care. Intensity was significantly greater among Medicare beneficiaries for all conditions except colectomy (exhibit 3). For example, in AMI, overall use of any postacute care was no different between Medicare and commercial insurance. But nearly half of AMI patients were predicted to use some form of postacute care, and among these users, the average Medicare beneficiary spent an additional \$1,684 during the ninety-day episode (exhibit 3). The largest differences for AMI were seen in outpatient rehabilitation and home health (exhibit 4).

For all three conditions in which average total SNF spending was greater in Medicare (CHF, stroke, and THR), average length-of-stay in a SNF was significantly greater for Medicare beneficiaries (appendix supplement 4, table 4).<sup>23</sup>

For stroke, intensity was significantly greater among Medicare beneficiaries for SNF (\$7,845) and home health (\$2,490) and outpatient rehabilitation (\$851), but this was offset in overall spending by the decreased rate of use of inpatient rehabilitation (exhibit 4).

**INCIDENCE OF AND SPENDING ON READMISSIONS** Greater spending on postacute care in Medicare was not associated with a significant difference in rate of, or spending on, readmissions between weighted payer cohorts for any of the six conditions. As shown in exhibit 3, the

## EXHIBIT 3

Estimated use of, and price-adjusted spending on, postacute care and readmission for selected medical and surgical conditions at age 65, and increases in use and spending associated with changing from commercial insurance to Medicare

	Total postacute care		Readmission	
	Expected mean	Adjusted discontinuity	Expected mean	Adjusted discontinuity
<b>ACUTE MYOCARDIAL INFARCTION</b>				
Use	48.28%	−3.47%	17.31%	−2.34%
Intensity	\$1,478	\$1,684 <sup>***</sup>	\$22,561	−\$4,936
Average spending	\$714	\$703 <sup>***</sup>	\$3,904	−\$1,259
<b>CONGESTIVE HEART FAILURE</b>				
Use	28.59%	3.10%	36.93%	−6.19%
Intensity	\$3,501	\$3,468 <sup>***</sup>	\$22,657	\$3,418
Average spending	\$1,001	\$1,207 <sup>***</sup>	\$8,368	−\$357
<b>STROKE</b>				
Use	57.09%	−5.79%	21.59%	−4.09%
Intensity	\$12,870	\$2,678 <sup>**</sup>	\$20,813	−\$1,087
Average spending	\$7,347	\$628	\$4,494	−\$1,054
<b>CORONARY ARTERY BYPASS GRAFTING</b>				
Use	84.67%	−0.42%	13.27%	−1.44%
Intensity	\$2,095	\$1,441 <sup>**</sup>	\$25,766	−\$10,346
Average spending	\$1,774	\$1,205 <sup>**</sup>	\$3,460	−\$1,636
<b>COLECTOMY</b>				
Use	23.33%	12.42% <sup>****</sup>	19.18%	−1.25%
Intensity	\$4,081	\$800	\$16,429	\$1,852
Average spending	\$949	\$793 <sup>*</sup>	\$3,151	\$127
<b>TOTAL HIP REPLACEMENT</b>				
Use	62.16%	5.86% <sup>**</sup>	6.12%	0.87%
Intensity	\$1,326	\$2,678 <sup>****</sup>	\$13,455	−\$560
Average spending	\$824	\$1,899 <sup>****</sup>	\$825	\$78

**SOURCE** Authors' analysis of fee-for-service Medicare and Blue Cross Blue Shield of Michigan (BCBSM) preferred provider organization claims data from the Michigan Value Collaborative.

**NOTES** "Use" refers to the likelihood of any use. "Intensity" refers to the quantity of spending among users. Expected means represent the estimated likelihood of use or quantity of price-adjusted spending at age sixty-five for people insured by BCBSM. Adjusted discontinuities represent the estimated increase in predicted likelihood of use or quantity of spending at age sixty-five for Medicare beneficiaries, as compared with people insured by BCBSM, after propensity weighting and adjustment for age; they can be interpreted as the effect of insurance change. \*\* $p < 0.05$  \*\*\* $p < 0.01$  \*\*\*\* $p < 0.001$

adjusted discontinuities in predicted likelihood of readmission for Medicare beneficiaries were not significantly different from zero, ranging from 0.9 percent after THR to −6.2 percent for CHF.

## Discussion

We found that spending on postacute care was significantly greater in Medicare than in commercial insurance for clinically similar well-insured people around age sixty-five. These differences occurred across a diverse set of medical and surgical conditions. They were substantial in magnitude, ranging from increases of about two-thirds for CABG to more than double for THR. Although Medicare beneficiaries and commer-

cially insured patients differed in age, we ensured that they were clinically and demographically similar by applying careful exclusion criteria, propensity weighting, and age adjustment and using a narrow age range. Despite increased spending on postacute care in Medicare, there were no significant differences in readmission rates to suggest clinical benefit.

In particular, the intensity of spending among those who used postdischarge services was the consistent driver of increased total spending, rather than the choice to use any services at all. This finding differs from that seen in our previous work, involving Medicare beneficiaries only,<sup>5</sup> in which the proportional use of high-cost, inpatient postacute care was the dominant factor in differences between high- and low-spending hospitals. Differences in proportional use between hospitals suggested that practice patterns played a primary role in that analysis.

Differences in intensity between payers, as seen in the current study, suggest that reimbursement design and coverage differences may particularly influence the volume of services reimbursed, more than the clinical decision to use postacute care at all. For example, home health payments in Medicare are typically prospective, covering as many as sixty days of service. In contrast, BCBSM tends to pay for home health care per day or per visit, which may enable limitations on intensity or duration of services allowed. Alternatively, private payers might introduce co-payments or other consumer incentives to dissuade the use of less-needed services. We found that overall intensity of SNF spending was higher in Medicare and that it was length-of-stay in a SNF in particular that contributed to the difference. Likewise, others have observed that Medicare beneficiaries have greater average duration of SNF services after hospitalization.<sup>33,34</sup> Inpatient rehabilitation reimbursement, on the other hand, is typically determined prospectively, per discharge, and thus payments are less subject to variation due to daily intensity or length-of-stay. Accordingly, we found little significant difference between payers in price-standardized spending for these services.

The one condition for which there was not a significant difference in the primary outcome was stroke. Mean and median spending did not exhibit significant discontinuity at age sixty-five. Yet there were large and significant differences at the twenty-fifth and seventy-fifth percentiles. What appears to be different about stroke is a common and consistent clinical indication for use of inpatient postacute care in a majority of patients.<sup>35</sup> Stroke was overwhelmingly the condition with the greatest total mean spending and had by far the highest rate of use of inpatient

**EXHIBIT 4**

**Estimated use of, and price-adjusted spending on, postacute care for selected medical and surgical conditions at age 65, and increases in use and spending associated with changing from commercial insurance to Medicare, by type of postacute care**

	Skilled nursing facility		Inpatient rehabilitation		Home health		Outpatient rehabilitation	
	Expected mean	Adjusted discontinuity	Expected mean	Adjusted discontinuity	Expected mean	Adjusted discontinuity	Expected mean	Adjusted discontinuity
<b>ACUTE MYOCARDIAL INFARCTION</b>								
Use	3.48%	0.21%	1.64%	-0.42%	11.70%	4.76%**	41.60%	-6.75%**
Intensity	\$9,981	\$857	\$15,983	\$1,399	\$307	\$1,780****	\$294	\$1,042****
Average spending	\$348	\$52	\$262	-\$50	\$36	\$308****	\$122	\$343****
<b>CONGESTIVE HEART FAILURE</b>								
Use	6.10%	1.67%	1.74%	0.21%	21.17%	3.02%	4.17%	1.86%
Intensity	\$9,075	\$7,039**	\$18,109	-\$1,061	\$468	\$2,002****	\$755	\$194
Average spending	\$533	\$698**	\$315	\$17	\$99	\$498****	\$32	\$26
<b>STROKE</b>								
Use	12.67%	2.24%	28.43%	-8.47%***	19.71%	0.85%	32.58%	-9.04%***
Intensity	\$16,910	\$7,845***	\$17,010	-\$387	\$705	\$2,490****	\$674	\$851****
Average spending	\$2,142	\$1,548***	\$4,837	-\$1,518***	\$139	\$517****	\$219	\$139***
<b>CORONARY ARTERY BYPASS GRAFTING</b>								
Use	6.53%	0.47%	3.96%	-1.78%	51.35%	18.58%***	63.87%	-8.36%**
Intensity	\$10,210	-\$2,218	\$18,600	-\$2,927	\$255	\$1,748****	\$375	\$984****
Average spending	\$668	-\$107	\$737	-\$395	\$131	\$1,270****	\$240	\$515****
<b>COLECTOMY</b>								
Use	4.46%	0.61%	0.85%	2.26%**	20.23%	12.01%****	1.31%	0.07%
Intensity	\$17,027	-\$6,746	\$23,188	-\$6,256	\$437	\$1,801****	\$111	\$1,243
Average spending	\$760	-\$239	\$198	\$329	\$88	\$633****	\$1	\$17
<b>TOTAL HIP REPLACEMENT</b>								
Use	7.04%	4.14%***	0.85%	0.35%	42.36%	14.37%****	32.73%	-2.31%
Intensity	\$5,562	\$2,040***	\$18,396	-\$3,187**	\$298	\$2,226****	\$462	\$442****
Average spending	\$392	\$458***	\$156	\$26	\$126	\$1,306****	\$151	\$124****

**SOURCE** Authors' analysis of fee-for-service Medicare and Blue Cross Blue Shield of Michigan (BCBSM) preferred provider organization claims data from the Michigan Value Collaborative. **NOTES** "Use" refers to the likelihood of any use. "Intensity" refers to the quantity of spending among users. Expected means and adjusted discontinuities are explained in the notes to exhibit 3. \*\* $p < 0.05$  \*\*\* $p < 0.01$  \*\*\*\* $p < 0.001$

rehabilitation and skilled nursing. Potentially discretionary use, more likely to be influenced by coverage differences, was thus less evident for the average patient and instead was observed only at the upper and lower extremes of stroke episodes.

Overall, our findings are consistent with published evidence that Medicare reimbursement policies have incentivized more frequent and more prolonged use of SNFs.<sup>6,33,34,36,37</sup> Fee-for-service Medicare beneficiaries have previously been found to have greater use of and spending on SNF care than Medicare Advantage enrollees,<sup>10</sup> but the differences were smaller than those observed in our comparisons with commercially insured patients. The lack of association between reduced postacute care spending and the incidence of readmissions was also observed in the Medicare Shared Savings Program<sup>12</sup> and the Comprehensive Care for Joint Replacement model,<sup>14</sup> which suggests that payment policy should continue to incentivize more judicious use of postacute care in Medicare. We could

not determine whether additional postdischarge spending might have improved functional recovery, patient satisfaction, or other outcomes. However, prevention of readmission has often been a primary justification for the use of postacute care, and there does not appear to be evidence that spending levels seen in commercial insurance have adverse consequences for readmissions.

The focus of this study differs from that of previous regression discontinuity-based evaluations of coverage transitions at age sixty-five. Among previously uninsured people, there is a marked increase in the use of various medical services upon gaining Medicare coverage at age sixty-five.<sup>38,39</sup> In the current study, however, we compared Medicare beneficiaries with well-insured patients approaching age sixty-five and still found a marked increase in postacute care spending associated with fee-for-service Medicare. The implication of this finding is that independent of age-related trends and the effect of insurance itself, differences in coverage policy

and reimbursement design may powerfully influence spending on costly, clinically discretionary care around hospitalizations.

Understanding the determinants of postacute care use is increasingly important to hospitals facing risk-bearing bundled payment or other episode-based reimbursement arrangements. Already, the Comprehensive Care for Joint Replacement model has mandated ninety-day bundled episode payments for lower extremity joint replacement in selected metropolitan areas,<sup>40</sup> which places hospitals squarely at risk for the costs of ancillary care after discharge. Even more attention will be paid to expenditures after discharge as hospitals adapt to the rollout of the Bundled Payments for Care Improvement Advanced Model.<sup>41</sup> Hospital leaders, therefore, will need to be aware of the potential for prolonged and excess intensity of spending on postacute care, if they are to achieve improvements in overall episode spending among Medicare beneficiaries.

## Conclusion

Use of and spending on postacute care after hospitalization increased significantly with the transition to Medicare at age sixty-five. Clinically similar people in their sixties experienced significantly different likelihoods of discharge to SNFs and large differences in the intensity of services, depending on whether they were covered by commercial insurance or Medicare. These large-magnitude differences around age sixty-five were observed across varied medical and surgical conditions and suggest substantial excess discretionary Medicare spending after hospitalization. The additional spending and inpatient facility use among Medicare beneficiaries was not associated with a reduction in the likelihood of readmission. Though this is just one of many potential measures of quality of care after discharge, these findings suggest that coverage and payment policy could meaningfully influence spending on and use of care after discharge. Payment policy may thus be an effective means of incentivizing the high-value use of postacute care. ■

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## NOTES

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