

Medicare Accountable Care Spending Patterns: Shifting Expenditures Associated With Savings

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ABSTRACT

OBJECTIVES: To examine whether Medicare Shared Savings Program (MSSP) accountable care organizations (ACOs) changed their expenditure patterns from 2013 to 2016 and whether those changes were associated with reduced spending.

STUDY DESIGN: Fixed-effects regression model to assess changing expenditures over time and the effect of expenditures on savings rate. Multiple sensitivity analyses were conducted to ensure consistent results.

METHODS: MSSP public use files were the source of the data.

RESULTS: MSSP ACOs that achieved financial savings were associated with less spending on inpatient and skilled nursing facility care and more spending on physician services. On average, MSSP ACOs reduced expenditures on inpatient care, postacute care, ambulatory services, hospice care, and durable medical equipment, and they increased expenditures on care provided in the physician office setting.

CONCLUSIONS: Our findings suggest that ACOs may be able to achieve savings by reapportioning resources to different sites of care. Further research is needed to determine how ACOs are able to shift their expenditures.

The American Journal of Accountable Care. 2018;6(1):11-19

The Medicare Shared Savings Program (MSSP) seeks to improve care quality while reducing unnecessary costs in traditional Medicare fee-for-service by adopting an accountable care organization (ACO) model. MSSP participants receive additional Medicare payments for delivering care below an established benchmark price and for meeting certain population-focused quality measures. As of early 2018, CMS reported 561 MSSP ACOs covering 10.5 million lives, making it the largest of Medicare's ACO programs.¹ This paper examined whether, in their first 4 years, MSSP ACOs have changed spending patterns and if these changes are related to ACO savings.

The MSSP is a young program, and researchers have had limited data to assess both the quality outcomes and financial performance of the participating ACOs. In 2013, the first payment year of the program, MSSP ACOs collectively spent less than their benchmarks and therefore received bonus payments from CMS, although those payments exceeded savings and resulted in a net loss to Medicare of \$73.5 million.² However, Chernew and colleagues have criticized the benchmark as a metric for evaluating ACO savings and argued that quasi-experimental methods produce more accurate results that show more significant savings.³ In 2014 and 2015, MSSP ACOs demonstrated some savings, and the evidence suggests that ACOs that have been in the MSSP longer are more likely to generate savings.^{4,5}

Research on how ACOs have changed their utilization patterns has focused on the relationship between reductions in postacute care (PAC) spending and cost savings. McWilliams and colleagues found that the 2012 MSSP cohort saved money by reducing spending on inpatient care, skilled nursing facility (SNF) care, and home health care.⁵ In a subsequent study, McWilliams and colleagues found that MSSP participation was associated with less PAC spending.⁶

Other studies' findings have shown how Pioneer ACOs have saved money by spending less on inpatient care, hospital outpatient care, and PAC and by spending more on outpatient care in the physician's office.^{7,8} A study by Hsu and colleagues found that 1 Pioneer ACO's care management program reduced rates of emergency department visits by 6% and reduced hospitalizations by 8%.⁹

Our study adds to this literature by using 4 years of data to examine within-ACO changes and how MSSP ACOs apportioned resources from 2013 to 2016. We asked 2 questions: First, are MSSP ACOs changing their spending patterns across various care settings over time? Second, are spending patterns different among ACOs that have improved their savings rate compared with ACOs that have not?

Many studies attempt to compare ACOs with non-ACOs; however, our research examined changes within the MSSP ACOs themselves, which allowed us to observe longitudinal changes in care delivery. Of course, relying on quantitative data and statistical methods only allowed us to observe associations in these trends, not to determine why and how MSSP ACOs are able to make these changes. These changes are also not necessarily driven by the organization becoming an ACO and may reflect a broader trend in patient management. Still, understanding these trends in expenditures can provide insights into what kinds of changes in care are occurring in ACOs and whether they are associated with reduced spending.

DATA AND METHODS

Data

The data used for this analysis were primarily based on the MSSP ACO Public Use Files (PUFs) released annually by CMS.¹⁰⁻¹³ The PUFs contain more than 100 variables based on expenditures, beneficiary demographics, admissions, quality, and personnel information for all ACOs participating in the MSSP program.

The primary variables of interest for this study were the savings rate, total expenditures, and an indicator variable about whether an ACO saved in each year. The savings rate was defined as the percentage of savings relative to expected benchmark expenditures. This was the same as benchmark expenditures minus the total expenditures divided by the benchmark expenditures.

CMS made minor changes to the format of the PUFs after the first year of the MSSP. Consequently, certain variables were only available for 2014 to 2016 and were not included in the original 2013 PUF. This constrains some model specifications to only include the last years of data. However, certain variables from the 2013 PUF,

such as the savings rate, could be successfully reconstructed based on other available variables. The 2013 PUF also included data on ACOs that entered in 3 separate rounds.¹⁴ In the original data, the expenditures were not annualized because some ACOs were in the program for more than 12 months. We annualized the data based on the start dates of the participating ACOs.

The benchmark expenditures were established by the historic performances of the ACOs, based on the defined population of Medicare beneficiaries for which that ACO is responsible. The benchmark was established prior to the 3 years of enrolling in the ACO and adjusted forward with the national growth rate. ACOs were rated relative to their own performance. Modifications to this benchmark rule have been implemented, but they were not in place at the time of this research.¹⁵

Methods

To investigate whether ACOs have reduced costs and how they have reallocated money to different sites of care, we performed 2 primary analyses. For these analyses, we used a fixed-effects regression model to evaluate changing expenditures over time and the effect of expenditures on savings rate. We standardized the expenditure categories as a percent of total expenditures. We used a fixed-effects model for our primary analyses because we believed that certain ACOs are more likely to achieve better results based on unobserved characteristics. Every ACO's unique characteristics may impact the savings rate or other outcomes we measured. To control for this, the fixed-effects model removed all entity-specific characteristics that were time-invariant and we analyzed changes that occur within ACOs. This allowed us to focus on the effects of changing expenditures on the savings rate while excluding the entity-specific effects.

Multiple sensitivity analyses were conducted to ensure consistent results. We also examined the size of the ACO, the number of admissions, the rate of readmissions, and other ACO characteristics; however, none of these factors influenced the results, nor were they significant.

Analysis of Changing Expenditures

To analyze whether expenditure patterns are changing over time, we utilized an unadjusted year fixed-effects regression model. Each expenditure was used as a dependent variable with time as the independent variable. This method isolated the changes over time to each type of expenditure to create an unadjusted year fixed-effects model as described in the model below, where α_i represents the ACO fixed effects, δ_t represents year fixed effects, and μ_{it} represents the error term:

$$\text{Expenditure Category}_{it} = \delta_t + \alpha_i + \mu_{it}$$

Analysis of Expenditures on Savings Rate

We also used a fixed-effects regression analysis to evaluate how shifting expenditures affect performance and savings.¹⁶ Fixed-effects

regression analysis compares an ACO with itself over time to examine how an ACO changes. It examines the within-unit change in the dependent variable (ie, savings rate) based on within-unit changes of the independent variables (ie, percent inpatient expenditures). Doing this implicitly controls for all time-invariant characteristics of ACOs, which may be difficult or impossible to measure. Mechanically, this is done as follows in the model below, where α_i represents the ACO fixed effects, δ_t represents year fixed effects, μ_{it} represents the error term, and β_n measures the linear relationship between savings rate and the expenditure categories for each ACO within each time period:

$$Savings\ Rate_{it} = \beta_n Expenditure\ Categories_{it} + \delta_t + \alpha_i + \mu_{it}$$

This type of analysis allowed us to focus on ACO characteristics that were changing over time, over which ACOs have a larger measure of control. We also used a beneficiary weighted fixed-effects model to test that our results were consistent. We used the latest year of beneficiary equivalent years, because the weights could not vary over time, and we found no major changes to our findings.

We extended the fixed-effects model to a logistic regression with fixed effects. This allowed us to use a binary variable as the dependent variable. We used the logistic regression with fixed effects to look at differences between ACOs that saved money compared with

ACOs that did not achieve savings. We presented this analysis in addition to the analysis of how expenditures affect the savings rate. The independent variables are consistent with our previous models, but the dependent variable now takes the value of 1 if the ACO saved money in a given year and 0 otherwise:

$$Saved_{it} = \beta_n Expenditure\ Categories_{it} + \delta_t + \alpha_i + \mu_{it}$$

Because many of the independent variables were collinear in this analysis and the coefficients were difficult to interpret for the logistic fixed effects, we verified the results using alternative specifications where the expenditure is the dependent variable as a sensitivity analysis. Whether an ACO saved or did not save is included as an independent variable. This showed which expenditures were statistically significant for ACOs that achieved savings compared with ACOs that did not save after controlling for other ACO expenditures.

RESULTS

Changing Expenditures Over Time

Total per capita MSSP expenditures increased from \$10,351 in 2013 to \$10,745 in 2016, representing a 1.3% annual growth rate. From the simple fixed-effects regression, we found that different types of expenditures are changing significantly over time. The expenditures that were decreasing in absolute terms were SNF,

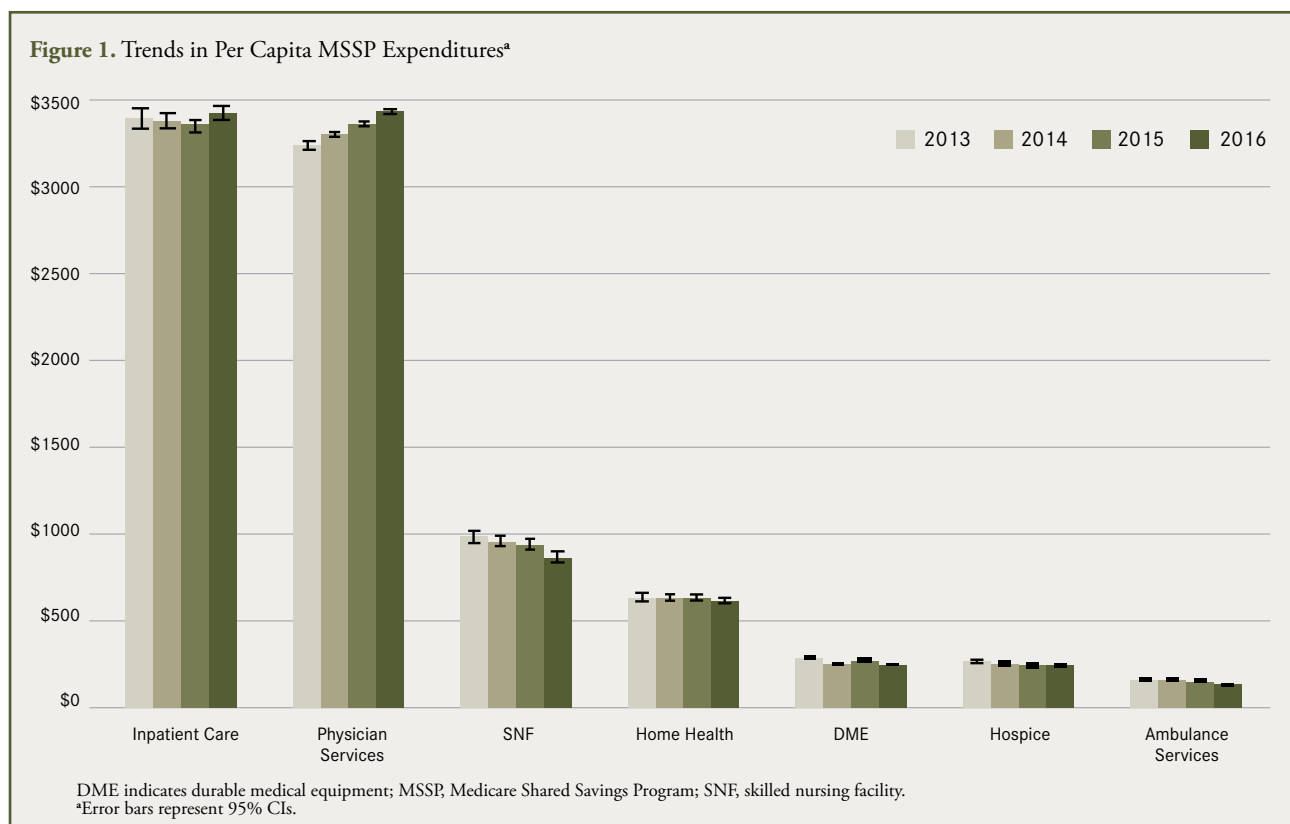


Table 1. Regression Coefficients for Fixed-Effects Models^a

Model	1	2	3	4
Variable	Savings Rate	Savings Rate	Saved	Saved
Percent of expenditures on inpatient care	-0.461** (0.195)	-0.415** (0.204)		
Percent of expenditures on hospice	0.557 (0.450)	0.578 (0.455)		
Percent of expenditures on SNF	-0.820** (0.331)	-0.825*** (0.314)		
Percent of expenditures on physician services	0.228 (0.279)	0.254 (0.287)		
Percent of expenditures on ambulance services	0.0454 (0.679)			
Percent of expenditures on home health	-0.314 (0.282)	-0.283 (0.290)		
Percent of expenditures on DME	1.163** (0.552)			
Constant	0.119 (0.166)	0.125 (0.168)		
Logistic Regression Results (fixed effects)				
Percent of expenditures on inpatient care			-30.63*** (9.644)	-28.73*** (9.432)
Percent of expenditures on hospice			56.35** (23.75)	55.76** (23.62)
Percent of expenditures on SNF			-33.93*** (10.23)	-28.89*** (9.331)
Percent of expenditures on physician services			28.26*** (8.815)	29.78*** (8.594)
Percent of expenditures on ambulance services			75.48 (62.06)	
Percent of expenditures on home health			-28.71* (15.66)	-29.11* (15.31)
Percent of expenditures on DME			16.15 (33.85)	
Observations	1377	1377	624	624
R ²	0.216	0.208		
Number of ACOs	528	528	191	191

ACO indicates accountable care organization; DME, durable medical equipment; SNF, skilled nursing facility.

* $P < .1$; ** $P < .05$; *** $P < .01$.

^aRobust standard errors in parentheses.

ambulance services, and durable medical equipment (DME) expenditures. Expenditures that were not statistically different in 2013 and 2016 were inpatient, home health, and hospice. The only expenditure type to increase year-over-year was physician services, which includes all nonhospital outpatient services (Figure 1). On average, per capita expenditures on physician services increased \$190 from 2013 to 2016. These patterns reflect the percent changes previously described and can be seen in Figure 1.

Effects of Expenditures on ACO Savings

We found that a decrease of 1% on inpatient spending was associated with a 0.46% increase in savings rate, holding all else equal. We found that a decrease of 1% on SNF spending resulted in a 0.82% increase in savings rate. Additionally, we found through our logistic regression that increased percentages of spending on physician services and hospice were associated with ACOs that saved, whereas increased spending on inpatient and SNF expenditures were associated with ACOs that did not save.

Table 1 displays these findings. Model 1 is our baseline model, using savings rate as our dependent variable. Model 2 excludes ambulatory and DME expenditures to address issues of multicollinearity; these beta coefficients and CIs are displayed in Figure 2.

Model 3 is a logistic regression using the same independent variables as Model 1, where the dependent variable is a binary indicator of whether an ACO saved or did not save. Model 4 uses the same logistic regression excluding the 2 variables as previously discussed (Figure 3).

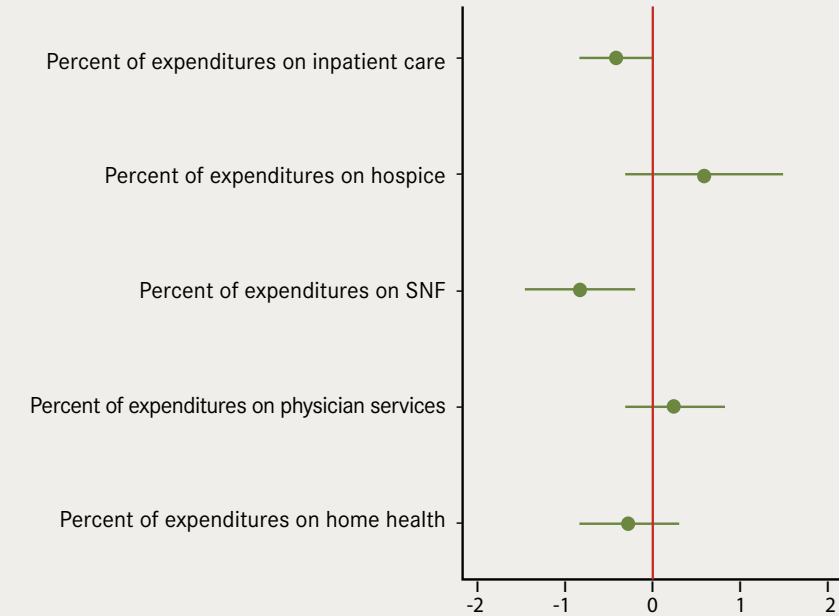
The results of our sensitivity analysis showed that, on average, ACOs that saved, holding all else equal, spent 0.36% less on inpatient, 0.31% less on SNF, and 0.16% less on home health expenditures.

DISCUSSION

We found that MSSP ACOs were shifting their expenditures and care utilization patterns. Between 2013 and 2016, MSSP ACOs made modest but nonetheless meaningful changes to where money was spent. MSSP ACOs are spending a smaller proportion of their money on inpatient services and PAC services, such as SNFs and home health, and a greater proportion of their money on services in the physician office setting and on hospice.

Although inpatient spending among MSSP ACOs increased in absolute terms from 2013 to 2016, inpatient spending as a percentage of total ACO spending decreased during that time, as seen in

Figure 2. Effect of Independent Variables on the Savings Rate (Model 2^a regression results)^b



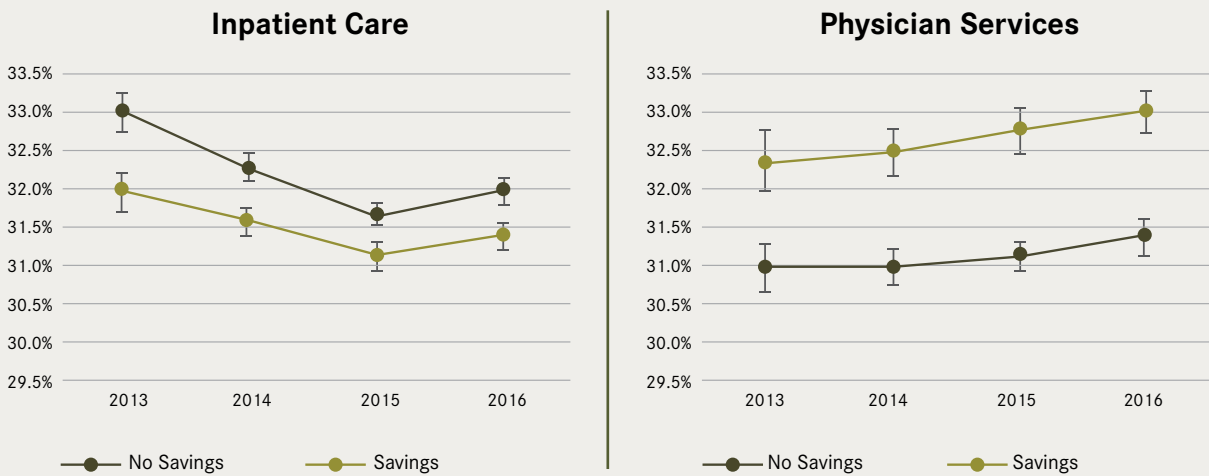
SNF indicates skilled nursing facility.
^aModel 2 looks at the relation between savings rate and expenditures. It is similar to the baseline model but excludes durable medical expenditures and ambulance expenditures due to multicollinearity.
^bGreen dots represent the expenditure categories and the lines represent 95% CIs. Expenditure categories that are statistically significant, inpatient care and SNF expenditures, do not cross the 0 line marked in red.

Figure 3. SNF spending decreased in both absolute terms and as a proportion of spending from 2013 to 2016. Future research is needed to assess if and how ACOs continue to shift expenditures.

We also found that although all MSSP ACOs are shifting their expenditures, the ACOs that improved their savings rate most rapidly were those that had shifted SNF and inpatient expenditures more dramatically. This finding indicates that the degree to which ACOs shift their expenditures matters and that significant additional savings can be gained by shifting inpatient and SNF spending toward physician services.

Our findings are consistent with the argument that some services may provide more value, leading to reductions in the cost of delivering healthcare.¹⁷ Increasing care in the physician office setting may reduce hospitalizations and the increased costs associated with inpatient stays,¹⁸ while focusing on well-structured

Figure 3. Spending Over Time by Category for ACOs That Achieved Savings Compared With ACOs That Did Not Save



ACO indicates accountable care organization.

Table 2. Regression Results for Key Variables (Sensitivity Analysis)^a

VARIABLES	Inpatient Care	Hospice	SNF
Saved	-0.00345*** (0.000890)	0.000437 (0.000398)	-0.00311*** (0.00109)
Percent of expenditures on hospice	-0.388*** (0.0917)		0.508*** (0.135)
Percent of expenditures on SNF	0.138* (0.0751)	0.0819*** (0.0183)	
Percent of expenditures on physician services	-0.238*** (0.0622)	-0.0642*** (0.0179)	-0.412*** (0.0788)
Percent of expenditures on ambulance services	0.189 (0.193)	0.0547 (0.0801)	1.016*** (0.257)
Percent of expenditures on home health	-0.313*** (0.0721)	-0.00175 (0.0458)	-0.215** (0.0951)
Percent of expenditures on DME	-0.00128 (0.280)	-0.121 (0.0776)	-1.172*** (0.359)
2013 (excluded)	0 (0)	0 (0)	0 (0)
2014	-0.00590*** (0.00164)	-0.00238*** (0.000518)	-0.00581** (0.00232)
2015	-0.0111*** (0.00154)	-0.00288*** (0.000617)	-0.00540** (0.00246)
2016	-0.00701*** (0.00251)	-0.00225*** (0.000808)	-0.0134*** (0.00333)
Percent of expenditures on inpatient care		-0.0783*** (0.0195)	0.172* (0.0995)
Constant	0.415*** (0.0346)	0.0673*** (0.0123)	0.182*** (0.0667)
Observations	1377	1377	1377
R ²	0.382	0.206	0.561
Number of ACOs	528	528	528

ACO indicates accountable care organization; DME, durable medical equipment; SNF, skilled nursing facility.

* $P < .1$; ** $P < .05$; *** $P < .01$.

^aRobust standard errors in parentheses.

care transitions between the hospital and the PAC setting may reduce unnecessary costs.¹⁹⁻²¹

Although we can observe that ACOs are changing the proportion of money that is spent on different types of care and that these changes are associated with modest savings, the data do not show us how or why ACOs are making these changes. Research using richer data on ACO experiences, such as ACO case studies, is needed to determine why ACOs are making these decisions and what actions they are taking to increase money spent on physician office care and decrease money spent on inpatient care and SNFs.

An in-depth exploration of the individual quality metrics and the composite quality score of MSSP ACOs between 2013 and 2016 can be found in our companion study, which investigates whether ACOs have improved quality over time. Our companion study found that, on average, MSSP ACOs have improved most quality measures.²² Importantly, this suggests that there is no association between shifting expenditures away from the hospital setting and a reduction in quality outcomes.

Policy Implications

Given healthcare's rising costs, it is important to understand the tactics that ACOs are using to reduce spending. Due to the broad changes that occur relatively consistently across ACOs, our findings suggest that MSSP ACOs may be making deliberate and different choices over time about where they are spending their money and that these choices are associated with modestly improved financial savings. Although the overall early spending effects are modest, this evidence suggests, first, that ACOs can shift spending in ways that reduce overall costs, and second, a need for further understanding of how ACOs have made these changes, which could help the healthcare system rein in costs.

MSSP ACOs, we observed, increased their savings rate and potential for earning the model's bonus payments by reappportioning money to different, lower-cost sites of care. Sustainable changes to our healthcare system require more than just paying differently for care. They also involve delivering care in a different way, including prioritizing lower-acuity, lower-cost settings. New payment models, such as the alternative payment

Physician Services	Ambulance	Home Health	DME
0.00150 (0.00142)	0.0000758 (0.000180)	-0.00164** (0.000808)	0.000123 (0.000230)
-0.522*** (0.120)	0.0121 (0.0170)	-0.00505 (0.132)	-0.0313 (0.0201)
-0.541*** (0.0888)	0.0361*** (0.00670)	-0.0999** (0.0469)	-0.0492*** (0.0157)
	0.00724 (0.00578)	-0.149*** (0.0515)	-0.00783 (0.0182)
0.267 (0.189)		-0.461** (0.191)	0.00368 (0.0467)
-0.420*** (0.0930)	-0.0352*** (0.0131)		-0.0386** (0.0162)
-0.245 (0.560)	0.00312 (0.0400)	-0.428** (0.209)	
0 (0)	0 (0)	0 (0)	0 (0)
-0.00617** (0.00295)	0.0000165 (0.000213)	-0.00429*** (0.00135)	-0.00395*** (0.000230)
-0.00797*** (0.00284)	-0.000710*** (0.000246)	-0.00616*** (0.00179)	-0.00363*** (0.000290)
-0.00851* (0.00476)	-0.00130*** (0.000314)	-0.00904*** (0.00234)	-0.00625*** (0.000360)
-0.389*** (0.0807)	0.00840 (0.00746)	-0.182*** (0.0604)	-0.000067 (0.0147)
0.531*** (0.0463)	0.00813** (0.00366)	0.193*** (0.0420)	0.0389*** (0.0118)
1377	1377	1377	1377
0.491	0.191	0.173	0.483
528	528	528	528

models encouraged under the Medicare Access and CHIP Reauthorization Act, represent an important avenue to incent such changes. Continuing to refine and adopt new payment models may enable faster changes in practice, including care management pathways that reduce hospital use.

Finally, our research adds to the literature that suggests reducing spending on SNFs presents an opportunity for ACOs to lower costs.^{6,22,23} Although further work is needed to determine how ACOs may be able to shift some money away from SNFs, policy makers should continue to develop programs that incentivize care coordination, well-planned care transitions, and strategic partnerships between hospitals and PAC settings that have been shown to lower spending.²⁴

Limitations

The methods and data used for this analysis present several limitations.³ First, lack of a suitable counterfactual outside the MSSP program makes comparisons with what would have happened if these providers were not included in the MSSP ACO program

impossible. Due to this limitation, our analysis relied on comparing changes based on benchmark expenditures within ACOs. Second, the MSSP benchmark itself is subject to critiques and limitations. Chernew and colleagues have persuasively argued that because policy goals drive the development of the benchmark, it is not a reliable counterfactual.³ Another limitation of our paper is that we define ACOs that saved as those that spent less than their benchmarks, which may not be the most accurate measure of savings. Although we examine within-ACO changes over time, we cannot know decisively whether these changes were unique to ACOs or representative of more general trends.²⁵ In addition, the savings rate may be influenced by changes to the case mix experienced by ACOs. Although we believe that holding ACO-specific characteristics fixed likely eliminated some of this issue, it should be acknowledged that large changes in case mix within an ACO from one year to the next may lead to erroneous estimates.

The PUF data present several challenges. Not all expenditures are captured and tracked in the PUFs. For example, hospital outpatient

spending data were not available in 2013 and were added in 2014. Because not all expenditures are tracked, the omitted expenditures may have a small relationship to the savings rate or may change over time, but this is a limitation presented by the available data. The main variables of interest were the various types of expenditures, which often have a collinear relationship. To verify the results, we used a sensitivity analysis to ensure the results were robust when they were evaluated using differing specifications (Table 2).

Because the MSSP program allows ACOs to enter and exit the program from one year to the next, the panel data assembled are unbalanced. This raises questions regarding which ACOs are likely to drop out and which characteristics are typically found within these organizations. A separate study using survival analysis would be more suitable for addressing this question. This analysis focuses on variation in expenditures and leaves the question of which ACOs are likely to drop out for a separate analysis.

CONCLUSIONS

We observed that, over time, MSSP ACOs are changing the proportion of money that is spent on different care settings. However, the ACOs that are achieving the most savings are making more dramatic shifts in expenditures. Our finding, that shifting more money to the physician office setting and away from SNF and inpatient spending is correlated with greater overall savings, suggests that this tactic may be pursued by other ACOs as a strategy to achieve greater reductions in overall spending without compromising quality.

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Source of Funding: None.

Author Disclosures: Dr Muhlestein, Mr Morrison, and Dr Winfield are employed by Leavitt Partners, which consults about ACOs and works with providers and ACOs. Dr Muhlestein has given speeches that included ACO research, some of which provided travel expenses or small honoraria, and has attended multiple ACO conferences. He has received grants from The Commonwealth Fund and the Gordon and Betty Moore Foundation for work on ACOs. Dr Saunders, Dr Bleser, and Dr McClellan are employed by Duke University, which has an ACO that was not involved with this research, nor did it fund the research in this paper. They have attended meetings of the Health Care Payment Learning and Action Network and the Accountable Care Learning Collaborative. They have a grant unrelated to this manuscript from the Moore Foundation to study ACOs, and Dr McClellan also has a grant unrelated to this manuscript from the Commonwealth Fund to study global best practices in accountable care. Dr McClellan is

co-chair of the Health Care Payment Learning and Action Network and co-chair of the Accountable Care Learning Collaborative. The authors report no other relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (DBM, SQM, RSS, WKB, MBM); acquisition of data (DBM, SQM, RSS, WKB); analysis and interpretation of data (DBM, SQM, RSS, WKB, MBM, LDW); drafting of the manuscript (DBM, SQM, RSS, WKB, LDW); critical revision of the manuscript for important intellectual content (DBM, SQM, RSS, WKB, MBM, LDW); statistical analysis (DBM, SQM, RSS, WKB); administrative, technical, or logistic support (RSS, WKB, LDW); and supervision (RSS).

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REFERENCES

1. Performance Year 2018 Medicare Shared Savings Program accountable care organizations. CMS website. data.cms.gov/Special-Programs-Initiatives-Medicare-Shared-Savin/Performance-Year-2018-Medicare-Shared-Savings-Prog/28n4-k8qs. Updated January 11, 2018. Accessed January 17, 2018.
2. McWilliams JM. Changes in Medicare Shared Savings Program savings from 2013 to 2014. *JAMA*. 2016;316(16):1711-1713. doi: 10.1001/jama.2016.12049.
3. Chernew ME, Barbey C, McWilliams JM. Savings reported by CMS do not measure true ACO savings. *Health Affairs Blog*. June 19, 2017. healthaffairs.org/blog/2017/06/19/savings-reported-by-cms-do-not-measure-true-aco-savings. Accessed July 18, 2017.
4. Muhlestein D, Saunders R, McClellan M. Medicare accountable care organization results for 2015: the journey to better quality and lower costs continues. *Health Affairs Blog*. September 9, 2016. healthaffairs.org/blog/2016/09/09/medicare-accountable-care-organization-results-for-2015-the-journey-to-better-quality-and-lower-costs-continues. Accessed June 8, 2017.
5. McWilliams JM, Hatfield LA, Chernew ME, Landon BE, Schwartz AL. Early performance of accountable care organizations in Medicare. *N Engl J Med*. 2016;374(24):2357-2366. doi: 10.1056/NEJMsa1600142.
6. McWilliams JM, Gilstrap LG, Stevenson DG, Chernew ME, Huskamp HA, Grabowski DC. Changes in postacute care in the Medicare Shared Savings Program. *JAMA Intern Med*. 2017;177(4):518-526. doi: 10.1001/jamainternmed.2016.9115.
7. Nyweide DJ, Lee W, Cuerdon TT, et al. Association of Pioneer Accountable Care Organizations vs traditional Medicare fee for service with spending, utilization, and patient experience. *JAMA*. 2015;313(21):2152-2161. doi: 10.1001/jama.2015.4930.

8. McWilliams JM, Chernew ME, Landon BE, Schwartz AL. Performance differences in year 1 of Pioneer Accountable Care Organizations. *N Engl J Med.* 2015;372(20):1927-1936. doi: 10.1056/NEJMsa1414929.
9. Hsu J, Price M, Vogeli C, et al. Bending the spending curve by altering care delivery patterns: the role of care management within a Pioneer ACO. *Health Aff (Millwood).* 2017;36(5):876-884. doi: 10.1377/hlthaff.2016.0922.
10. 2013 Shared Savings Program Accountable Care Organizations (ACO) PUF. CMS website. data.cms.gov/Special-Programs-Initiatives-Medicare-Shared-Savin/2013-Shared-Savings-Program-Accountable-Care-Organ/faep-t7cf. Published November 14, 2016. Metadata updated September 21, 2017. Accessed July 31, 2017.
11. 2014 Shared Savings Program (SSP) Accountable Care Organizations (ACO) PUF. CMS website. data.cms.gov/Special-Programs-Initiatives-Medicare-Shared-Savin/2014-Shared-Savings-Program-SSP-Accountable-Care-O/888h-akbg. Published October 30, 2015. Updated November 19, 2015. Accessed July 31, 2017. Metadata updated September 21, 2017.
12. 2015 Shared Savings Program (SSP) Accountable Care Organizations (ACO) PUF. CMS website. data.cms.gov/Special-Programs-Initiatives-Medicare-Shared-Savin/2015-Shared-Savings-Program-SSP-Accountable-Care-O/7rrf-3gxr. Published October 19, 2016. Metadata updated September 21, 2017. Accessed July 31, 2017.
13. 2016 Shared Savings Program (SSP) Accountable Care Organizations (ACO) PUF. CMS website. data.cms.gov/Special-Programs-Initiatives-Medicare-Shared-Savin/2016-Shared-Savings-Program-SSP-Accountable-Care-O/3jk5-q6dr. Published November 7, 2017. Accessed December 11, 2017.
14. Shared Savings Program: in the news. CMS website. cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/News-and-Updates.html. Published May 31, 2017. Updated September 15, 2017. Accessed June 15, 2017.
15. CMS. Proposed rule: Medicare Program; Medicare Shared Savings Program; Accountable Care Organizations—revised benchmark rebasing methodology, facilitating transition to performance-based risk, and administrative finality of financial calculations. *Federal Register.* February 3, 2016. federalregister.gov/documents/2016/02/03/2016-01748/medicare-program-medicare-shared-savings-program-accountable-care-organizations-revised-benchmark. Accessed June 15, 2017.
16. Allison PD. *Fixed Effects Regression Models.* Thousand Oaks, CA: SAGE Publications, Inc; 2009.
17. Porter ME. A strategy for health care reform—toward a value-based system. *N Engl J Med.* 2009;361(2):109-112. doi: 10.1056/NEJMp0904131.
18. Casalino LP, Pesko MF, Ryan AM, et al. Small primary care physician practices have low rates of preventable hospital admissions. *Health Aff (Millwood).* 2014;33(9):1680-1688. doi: 10.1377/hlthaff.2014.0434.
19. Naylor MD, Aiken LH, Kurtzman ET, Olds DM, Hirschman KB. The importance of transitional care in achieving health reform. *Health Aff (Millwood).* 2011;30(4):746-754. doi: 10.1377/hlthaff.2011.0041.
20. Brock J, Mitchell J, Irby K, et al; Care Transitions Project Team. Association between quality improvement for care transitions in communities and rehospitalizations among Medicare beneficiaries. *JAMA.* 2013;309(4):381-391. doi: 10.1001/jama.2012.216607.
21. Verhaegh KJ, MacNeil-Vroomen JL, Eslami S, Geerlings SE, de Rooij SE, Buurman BM. Transitional care interventions prevent hospital readmissions for adults with chronic illnesses. *Health Aff (Millwood).* 2014;33(9):1531-1539. doi: 10.1377/hlthaff.2014.0160.
22. Bleser WK, Saunders RS, Muhlestein DB, Morrison SQ, Pham HH, McClellan MB. ACO quality over time: the MSSP experience and opportunities for system-wide improvement. *Am J Accountable Care.* 2018;6(1). In press.
23. Shortell SM, Wu FM, Lewis VA, Colla CH, Fisher ES. A taxonomy of accountable care organizations for policy and practice. *Health Serv Res.* 2014;49(6):1883-1899. doi: 10.1111/1475-6773.12234.
24. Lage DE, Rusinak D, Carr D, Grabowski DC, Ackerly DC. Creating a network of high-quality skilled nursing facilities: preliminary data on the postacute care quality improvement experiences of an accountable care organization. *J Am Geriatr Soc.* 2015;63(4):804-808. doi: 10.1111/jgs.13351.
25. Colla CH, Lewis VA, Bergquist SL, Shortell SM. Accountability across the continuum: the participation of postacute care providers in accountable care organizations. *Health Serv Res.* 2016;51(4):1595-1611. doi: 10.1111/1475-6773.12442.
26. Cubanski J, Neuman T. The facts on Medicare spending and financing. Kaiser Family Foundation website. kff.org/medicare/issue-brief/the-facts-on-medicare-spending-and-financing. Published July 18, 2017. Accessed August 1, 2017.