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## Searching for the Fulcrum: Can Accountable Care Organizations Lower Spending by Balancing Specialists-to-Primary Care Providers?

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Searching for the Fulcrum: Can Accountable Care Organizations Lower Spending by  
Balancing Specialists-to-Primary Care Providers?

A Thesis Presented

By

VISHAL ANAND SHETTY

Submitted to the Graduate School of the  
University of Massachusetts Amherst in partial fulfillment  
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Health Policy and Management

Searching for the Fulcrum: Can Accountable Care Organizations Lower Spending by  
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## ABSTRACT

# SEARCHING FOR THE FULCRUM: CAN ACCOUNTABLE CARE ORGANIZATIONS LOWER SPENDING BY BALANCING SPECIALISTS-TO-PRIMARY CARE PROVIDERS?

SEPTEMBER 2018

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### Background:

While value-based payment models emphasizing care coordination have been widely implemented to improve quality and lower expenditures, supporting empirical evidence is sparse. Our objective was to quantify the impact of specialist-to-primary care physician involvement within accountable care organization (ACO) and its association with lower spending.

### Methods:

We conducted a retrospective cohort study of Medicare Shared Savings Program ACOs from 2012-2016 using publicly available data provided by the Centers for Medicare and Medicaid Services at the ACO level. We examined the association between the proportion of primary care services delivered by specialists versus other types of care providers and ACO spending using a generalized estimating equation model.

### Results:

The analytic dataset included 1381 MSSP-years. When compared to ACOs at the lowest (<35%) and highest (>60) levels of providing primary care services through specialists, ACOs who had 35% to 40% of primary care services delivered by specialists spent \$1,124 (95% CI, \$358 to \$1,891) and \$969 (95% CI, \$250 to \$1,688) less per capita, respectively. When stratified at varying levels of specialists providing primary care services, having four years of experience in the Medicare Shared Savings Program was consistently associated with lower spending when compared to having one to three years of experience.

### Conclusions and Relevance:

The optimal portion of specialists providing primary care services - to reduce spending - was found to be 35% to 40%. These findings suggest that integrating specialists in to the activities and objectives of MSSP ACOs could lead to lower spending and better performance.

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# CHAPTER 1

## INTRODUCTION

As part of the Affordable Care Act (ACA), the Centers for Medicare and Medicaid Services (CMS) was authorized to create the Medicare Shared Savings Program (MSSP) Accountable Care Organizations (ACOs). An ACO is a healthcare payment and delivery model intended to incentivize a collection of healthcare providers to cooperate, communicate, and coordinate patient care across multiple clinical settings.<sup>1</sup> The premise behind the model is that by creating accountability and realigning incentives for providers, ACOs can improve patient outcomes while lowering costs. For each ACO participant, CMS establishes a financial benchmark based on the beneficiaries in Medicare Parts A and B, who would have been assigned to the ACO in the three-year period prior to the start of the ACO's agreement period. If the expenditures for an ACO's beneficiaries are less than this benchmark in a given year, while fulfilling quality measure objectives, the ACO receives a financial payment equal to a proportion of the savings. As of April 2017, there were over 500 Medicare ACO contracts, providing care for nearly 10 million people.<sup>2</sup>

Expanding the influence of primary care was believed to provide the foundation necessary to slow the growth of spending;<sup>3</sup> thus, the putative success of the MSSP ACO incentive structures depended primarily on strong leadership and expanding primary care physicians' (PCPs) role to promote care coordination.<sup>4,5</sup> Despite the promulgation of the ACO payment model, studies have reported only modest improvements in lowering expenditures and improving quality.<sup>6,7</sup>

As most health expenditures are attributed to a small proportion of patients with complex clinical conditions,<sup>8</sup> specialists directly responsible for the ACOs' objectives may play an important role in promoting coordination of care for these high-cost patients.<sup>9</sup> Additionally, specialists can serve to regulate the utilization of expensive specialty services within the entire patient population. If aligned with the interests of the ACO, specialists may be incented to provide specialty services only when clinically necessary.<sup>10</sup> While CMS does not require the inclusion of specialists within MSSP ACOs,<sup>11</sup> previous studies suggest that the integration of specialists may be beneficial for ACO financial success,<sup>12,13</sup> Given the short time period since the implementation of the ACO model for Medicare,<sup>1</sup> the current literature related to this topic is limited. While the integration of specialists in ACOs may impact performance, empirical evidence is scarce. A recent study examined the association between the degree to which an ACO was primary care focused and spending and utilization rates.<sup>10</sup> Investigators found that ACOs with the least primary care focus (and higher specialty focus) had lower utilization rates, but similar spending levels compared to ACOs with the most primary care focus.<sup>10</sup> While this study provides some insight into the effects of specialists within ACOs, it did not examine ACO spending when PCP-Specialist involvement levels were more balanced.

We sought to examine the impact of PCP-to-specialist involvement on spending across a range of specialist activity levels in MSSP ACOs. We also examined the association between spending and a number of ACO characteristics across specialist activity levels. We hypothesized that the lowest expenditures will be among ACOs between the lowest and highest proportion of specialist activity. ACOs with the lowest levels of specialist activity will lack the specialized clinical expertise to coordinate care

or restrict utilization of specialty care for complex patients. Conversely, ACOs with highest levels of specialty activity may be susceptible to unnecessary specialty services.

## CHAPTER 2

### METHODS

#### **Data Source**

We used the CMS Shared Savings Program public use files to conduct our analysis.<sup>14</sup> These data represent ACO-level annual characteristics for the first four MSSP ACO performance periods from April 2012 to December 2016.

#### **Study Variables**

##### **Outcome and Primary Predictor**

The outcome was total expenditures per assigned beneficiary person year in the performance year, as defined by the Medicare Shared Savings Program specifications.<sup>15</sup> The primary predictor was specialist activity, which we defined as the proportion of primary care services provided by a specialist [see appendix].

##### **Covariates**

We used the proportion of male and Black/African American beneficiaries, and beneficiaries aged 85 or older to account for ACO demographics. To account for the severity-of-illness within ACO, we used the proportion of ESRD beneficiary person-years, disabled beneficiary person-years, dual-eligible person-years, and nondual-eligible person-years, which were adjusted by corresponding HCC risk scores. ACO characteristics (size, program experience in years, first year of participation) were represented by 1) the total attributed beneficiary person-years, 2) years since the ACO was first formed, 3) the calendar year started of the ACOs.

## **Statistical Analysis**

We calculated summary statistics for the outcome and our covariates by level of specialist activity, categorized into seven groups. For ACOs that started in 2012/2013 and 2014, we examined trends in the proportion of participating physician specialists and specialist activity until 2016.

We used a generalized estimating equation (GEE) model, clustering by ACO, to estimate the association between specialist activity and ACO expenditures while adjusting for ACO size and clinical risk-adjusted Medicare enrollment status groups. Then, we examined the relationship between other covariates and spending by stratifying on specialist activity group. Our primary variables of interest were gender, race, age attributed beneficiary proportions, ACO years of experience, first participation year, and ACO size. We also adjusted for the proportion of ESRD, disabled, dual-eligible, and non-dual eligible person-years. Each proportion was dichotomized about the median while the experience and calendar year started variables were categorized by year, with one year of experience and the first period serving as referents, respectively. All statistical analysis was conducted using R Version 3.3.1.

## CHAPTER 3

### RESULTS

#### ACO Characteristics

The analytic dataset included 1381 MSSP-years (221, 334, 393, and 433 MSSP ACOs for the second, third, and fourth performance periods respectively). Mean per capita expenditures were lowest (\$10,673) among ACOs who had 35% to 40% of their primary care services provided by specialists and highest (\$12,479) among ACOs who had greater than 60% of their primary care services provided by specialists (Table 1). The mean proportion of Black beneficiaries was lowest (14.3%) among ACOs with the least specialist activity (< 35% primary care services provided by specialists), and was highest (18.8%) among ACOs with high specialist activity (55% to 60% of primary care services provided by specialists). A similar trend was found in ACO size; ACOs with the least specialist activity tended to be the smallest (mean of 11,026 ACO beneficiary person-years), while ACOs with high specialist activity (55% to 60% of primary care services provided by specialists) tended to be the largest (mean of 19,143 ACO beneficiary person-years). Conversely, the mean proportion of disabled beneficiary person-years and the mean proportion of dual eligible beneficiary person-years followed the opposite trend. ACOs with the least specialist activity had the highest mean proportion of disabled beneficiary person-years (20.8%) and mean proportion of dual eligible beneficiary person-years (13.1%). ACOs with the most specialist activity (> 60% primary care services provided by specialists) tended to have to lowest mean proportion of disabled beneficiary person-years (10.9%) and mean proportion of dual eligible beneficiary person-years (6.9%).

For ACOs formed in 2012/2013, the proportion of specialists remained relatively constant across their first three years in the MSSP (47.7% in 2012/2013, 47.4% in 2014, 44.9% in 2015), but dropped to 38.6% in the 2016 performance period (Figure 1). Similarly, for ACOs formed in 2014, the proportion of specialists was 41.7% and 40.8% in the 2014 and 2015 performance periods respectively, but dropped to 36.3% in the 2016 performance period. At the same time, specialist activity remained fairly constant across performance periods for ACOs formed in 2012/2013 and ACOs formed in 2014.

### **Expenditure Estimates**

After adjusting for ACO size, Medicare enrollment status, and severity-of-illness, ACOs at the extrema of specialist activity (<30% and >60% of primary care services provided by specialists) had the highest per capita expenditures when compared to the ACOs in the referent (35% to 40% of primary care services provided by specialists). When compared to the referent, ACOs with the lowest specialist activity spent \$1,124 (95% CI, \$358 to \$1,891) more per capita, and ACOs with the highest specialist activity spent \$969 (95% CI, \$250 to \$1,688) more per capita (Table 2). Per capita expenditures followed a consistent trend of incremental increase in levels after the referent (Figure 2).

The association between gender, age, and race, and per capita expenditures was inconsistent across specialist activity levels (Table 3). A second year of experience was associated with \$1,119 to \$2,759 lower expenditures across every level of specialist activity in comparison to one year of experience. Four years of experience was associated with 8.2% to 32.2% lower expenditures than two or three years of experience across all

levels of specialist activity (except for ACOs with >60% of primary care services provided by specialists).

**Table 1: Outcome and ACO characteristic means by proportion of primary care services provided by a specialist (level of specialist activity)**

Proportion of Primary Care Services Provided by a Specialist							
Variable	< 35%	35% - 40%	40% - 45%	45% - 50%	50% - 55%	55% - 60%	> 60%
Per capita Expenditures	12286	10673	10773	11019	10949	11287	12479
Experience (Years)	2.0	2.0	2.1	2.1	1.9	2.2	2.1
Performance Period Started (1-4)	1.9	1.8	1.7	1.7	1.7	1.5	1.5
Proportion of male beneficiaries	42.8%	42.4%	42.3%	42.0%	41.8%	41.7%	42.1%
Proportion of beneficiaries aged 85+	13.2%	12.3%	12.3%	12.2%	11.9%	12.8%	13.3%
Proportion of Black beneficiaries	14.3%	14.9%	18.2%	16.7%	17.6%	18.8%	17.3%
ACO beneficiary person-years	11026	14397	17794	18534	16778	19143	18133
Proportion of ESRD person-years	1.1%	1.0%	1.0%	1.0%	1.0%	1.1%	1.1%
Proportion of Disabled person-years	20.8%	18.2%	15.0%	13.3%	11.5%	11.1%	10.9%
Proportion of Dual person-years	13.1%	9.9%	9.6%	6.7%	6.1%	6.2%	6.9%
Proportion of Non-Dual person-years	6.5%	70.8%	74.4%	79.0%	81.4%	81.6%	81.1%

**Figure 1: Trends in specialist proportion (of participating physicians) and specialist activity for MSSP ACOs that formed in 2012/2013 and 2014**

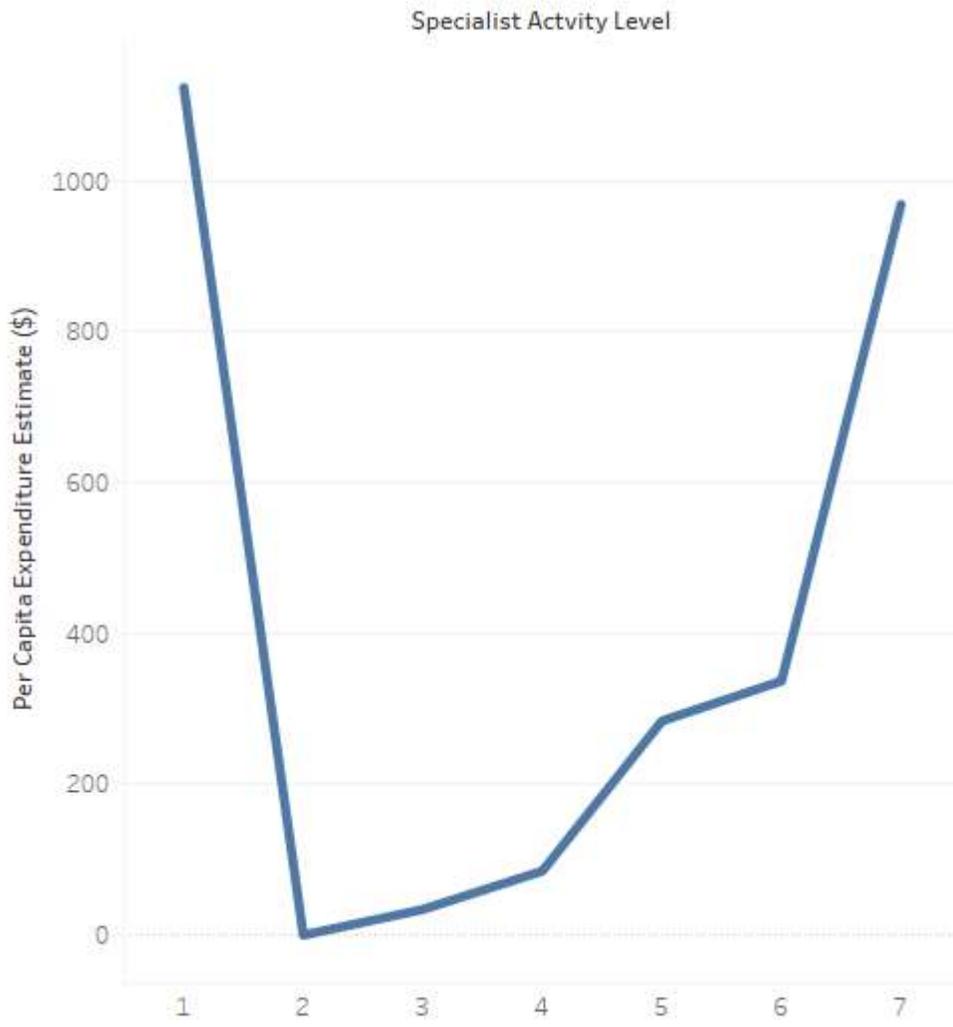


**Table 2: Per capita expenditure estimates by proportion of primary care services provided by specialist (specialist activity), adjusted for ACO size, Medicare enrollment, and severity of illness**

Predictor	Estimate	95% CI	p-value
Specialist Activity			
< 35%	1124.92	358.43, 1891.41	0.0040*
35% - 40%	-	-	-
40% - 45% (ref.)	34.10	-325.89, 394.10	0.8527
45% - 50%	85.15	-277.16, 447.46	0.6450
50% - 55%	284.14	-175.05, 743.33	0.2252
55 % - 60%	337.19	-258.83, 933.07	0.2675
> 60%	969.34	250.51, 1688.17	0.0082*
ACO Size	0.002	-0.006, 0.009	0.6105

Note: \* indicates significance at alpha level = 0.05

**Figure 2: Per capita expenditure estimate trend by proportion of primary care services provided by specialist (specialist activity)**



**Table 3: Per capita expenditure estimates by ACO characteristics, stratified by each specialist activity group and adjusted for Medicare enrollment status and severity of illness**

Proportion of Primary Care Services Provided by a Specialist							
Variable	< 35%	35% - 40%	40% - 45%	45% - 50%	50% - 55%	55% - 60%	> 60%
Experience (Year)							
Two	-2759*	-1310*	-1230*	-1119*	-1175*	-1742*	-2355*
Three	-3139*	-1179*	-1436*	-1306*	-1383*	-2003*	-2687*
Four	-3748*	-1865*	-1931*	-1924*	-1506*	-2590*	-1537*
Year Started							
2014	974	-1278*	-319	-560*	-519	870	-3489*
2015	-2917*	-1077*	-991*	-1450*	-404	-1284	-1812
2016	-1302	-1154*	-1659*	-1432*	-1904*	-2810*	-1240
Proportion male beneficiaries > median	-92	-690*	-383	-390	-475	-1148.9*	-296
Proportion beneficiaries age 85+ > median	-761	-64	-481*	514	-715*	441	-61
Proportion Black beneficiaries > median	2278*	-80	-216	102	-35	-204	-1097
Total person-years (ACO Size)	0.023	-0.005	0.003	0.005	0.007	0.025	-0.075

Note: \* indicates significance at alpha level = 0.05

## CHAPTER 4

### DISCUSSION

During the first four performance years of the MSSP program, we found expenditures were lowest when ACOs had 35% to 40% of their primary care services provided by specialists while ACOs who provided primary care at the specialist activity extrema (<30% and >60%) had the highest expenditures. This finding suggests that there may be a balanced level of PCP-specialist involvement in ACOs which contributes to reduced spending.

Our findings have several implications for the organization and structure of ACOs. While 35% to 40% of primary care services being provided by a specialist may not be a deliberate system design, it may suggest an organizational advantage when ACOs attempt to curtail spending. A certain proportion of specialists contributing to care coordination may lead to higher levels of engagement and better alignment of specialists with the goals of the ACO. This may also reflect an ACO's propensity for having the provision of primary care services be multidisciplinary, which can be effective in the management of chronic disease.<sup>16</sup> Moreover, our findings reinforce the importance of primary care physicians as the main conduit for care delivery in an ACO. Lower ACO expenditures may depend on empowering primary care physicians to lead in delivering and coordinating care, while creating ways to engage the right specialists based on contextual factors such as patient needs and available resources.

Our observation of ACOs with two or more years of experience in the MSSP having lower expenditures than ACOs in their first year is consistent with previous

literature on similar risk-based contracting programs.<sup>17-19</sup> This finding suggests that several years may be required for ACOs to implement the clinical and structural adjustments necessary for effective spending reduction. ACOs with four years of experience consistently having the lowest expenditures across levels of specialist activity may suggest that ACOs find ways to gradually reduce spending as they gain more experience in the MSSP. However, there may be a selection bias in that ACOs that persevere to the fourth program year are more capable of reducing spending when compared to ACOs that drop out earlier.

The trend in the proportion of specialists decreasing during the 2016 performance period may suggest a preemptive reaction by ACOs to changes in the calculation of the ACO financial benchmarking. In June 2016, new MSSP rules were finalized which incorporated regional FFS expenditures in to the calculation of an ACO's benchmark.<sup>15</sup> Under the historical spending calculation method, ACOs may be incented to limited efforts to reduce spending and may even increase spending in certain years.<sup>20</sup> The changes to the benchmark definitions may have removed these incentives and may thereby influence ACOs to drop specialists who were thought to be incurring high costs.

Given the growing number of patients across the United States receiving care under the umbrella of an ACO (32 million as of the end of the first quarter of 2017),<sup>2</sup> the ACO model may contribute to reducing health care expenditures. While specialist integration may be a vital piece for producing cost savings in ACOs, few incentives exist for clinician engagement.<sup>12</sup> Extrinsic factors may also limit the integration of specialists.<sup>12,21</sup> For example, ACOs located in rural areas may have physician shortages, particularly among specialists.<sup>21</sup> Smaller ACOs may be limited in their capacity to

influence specialist practice patterns through control of primary care referrals.<sup>12</sup>

Nevertheless, the findings of this study could provide a basis for policymakers and ACO organization leadership to take concrete steps toward integrating specialists, such as adopting established clinical quality measures for specialists,<sup>22</sup> or designing financial penalty programs for specialist lacks of participation in ACOs.

### **Limitations**

Our study has limitations. First, our primary predictor is intended to represent specialist integration and engagement. However, this measure may not reflect some important elements of specialist integration such as care coordination between specialists and PCPs and a prioritization of “high-value” specialty services. Second, the generalizability of these findings may be limited to MSSP ACOs. While the ACO model is similar across different contexts and payers, the MSSP program has its own set of structural conditions and requirements which may not apply to other types of ACOs. Third, ACO ownership status and rurality are two key factors that we could not account for in our analysis, which previous studies indicate may have an impact on our association of interest.<sup>6, 21, 23</sup>

### **Conclusion**

Since the creation of accountable care organizations, an emphasis has been placed on primary care to drive the success of the model. We found ACOs who provide 35% to 40% of primary care services through specialists to have lower expenditures than ACOs at any other level of specialist activity. Our findings provide initial evidence for the benefit of integrating specialists in MSSP ACOs. Evaluations of utilization patterns of

specialty services at the beneficiary level and coordination between PCPs and specialists at the provider level will be important for understanding how ACOs across levels of specialist activity differ in organizational behavior.

## APPENDIX

### EXPLANATION OF PRIMARY PREDICTOR

The primary predictor used in this study was the proportion of primary care services given by a specialist. This measure was calculated by dividing the total number primary care services given by providers in an ACO (adjusted by person-years) by the number of primary care services given by a specialist. A primary care service is defined as an ambulatory evaluation and management (E&M) service determined by Healthcare Common Procedure Coding System (HCPCS) codes 99201-99215, 99304-99350, G0402, G0438, G0439, and by revenue center codes 0521, 0522, 0524, 0525 when submitted by a federally qualified health center or rural health clinic.<sup>15</sup> If the largest share of a Medicare patient's primary care services are provided by a physician who is a member of an ACO, that patient will be retrospectively attributed to the ACO. Providers aligned with ACOs are identified through tax identification numbers (TINs) and physician type is identified through physician specialty codes. Providers who can give primary care services include primary care physicians (internists, family medicine physicians, geriatricians, and pediatricians), specialists, nurse practitioners, clinical nurse specialists, and physician assistants, and services given at a Federally Qualified Health Center or Rural Health Clinic.

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