

Distribution of Visits for Chronic Conditions Between Primary Care and Specialist Providers in Medicare Shared Savings Accountable Care Organizations

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Background: Medicare Shared Savings Program Accountable Care Organizations (ACOs) may focus more on primary care given ACO financial incentives. We examine variation in primary care treatment of 8 prevalent chronic conditions across ACOs and the factors affecting the variation, and compare the role of primary care in ACOs and non-ACOs.

Research Design: We conduct regression models at the ACO-level to identify factors predicting higher proportions of chronic condition visits delivered by primary care providers (PCPs) using 2013 Medicare claims and enrollment data. We compare the distribution of visits to PCPs, specialists and advanced practice providers between ACO-attributed and non-ACO-attributed beneficiaries.

Results: At the ACO-level, the proportion of patients who are white and of the local population who are college educated, the complexity of the patient population, and the supply of specialists were negatively associated with the proportion of chronic condition visits delivered by PCPs, whereas the percentage of contracted physicians within the ACO who were PCPs was positively associated. These results varied when subanalyses were conducted for each specific chronic condition. ACO care for chronic conditions was managed similar to that of care for non-ACO Medicare beneficiaries in 2013, but that some ACOs utilize PCPs to manage chronic conditions more than others.

Conclusions: Many ACOs may underutilize PCPs, and thus could actively shift care to less expensive primary care for potential savings to payers. Barriers to that shift could include low numbers of PCPs contracted in the ACO, and existing referral patterns and patient relationships with specialists.

Key Words: primary care, accountable care organizations, chronic condition management

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Accountable care organizations (ACOs) are groups of health care providers who agree to be collectively accountable for the overall care and costs of a prespecified

group of patients.^{1,2} Medicare ACOs were initiated in 2012 as part of the Affordable Care Act. Since then, over 10.5 million Medicare beneficiaries have been served by 562 ACOs participating in Medicare ACO initiatives.³ The largest Medicare ACO program is the Medicare Shared Savings Program (MSSP): as of January 2017, there are 480 MSSP ACOs serving 9 million assigned beneficiaries nationwide.³ In a shared savings arrangement, providers are encouraged to manage the health care needs of a defined patient population in the most cost-effective manner. Providers at MSSP ACOs are reimbursed on a fee-for-service basis, but can receive additional payments if costs for their patient population fall beneath a predetermined benchmark.⁴

Medicare beneficiaries are attributed to a MSSP ACO based on where they receive the majority of their primary care⁵; primary care is thus seen as a central component of the Medicare ACO model.⁶ Primary care has 4 main features: first contact for access to the health system, comprehensive care for most health needs, long-term focused care with an ongoing relationship, and coordinated care when needed elsewhere.⁷ It has been well-established that health systems that emphasize access to primary care have better outcomes and generally reduced costs compared with systems with poor access to primary care.^{7,8} A greater focus on primary care may occur within an ACO given their financial incentives. Research on Medicare's ACO initiatives have found that ACOs with a strong primary care orientation and workforce achieved greater savings and better care in the beginning of the program, as measured by readmissions, quality of diabetes care, and provision of preventive services.^{9–11}

Although these preliminary findings are notable, research on the role of primary care within ACOs and how these organizations are strategically changing their practices to optimally use primary care providers (PCPs) is still emerging. ACOs may shift visits for chronic disease management to PCPs, who can manage these conditions concurrently with other comorbidities in a more accessible and less expensive manner than specialists. Hollingsworth et al¹² analyzed data from the 2007 National Ambulatory Medical Care Survey on primary care and specialty providers and found that specialists provide routine management of 9 chronic conditions—care which could be reallocated to comprehensive primary care.

In this paper, we focus on 8 chronic conditions: asthma, chronic kidney disease (CKD), chronic obstructive pulmonary disease, diabetes, depression, hyperlipidemia, hypertension, and rheumatoid arthritis/osteoarthritis. Each condition was included in the Hollingsworth analysis with the exception of hyperlipidemia

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and hypertension. We chose these conditions because these chronic conditions can be managed routinely and effectively by comprehensive primary care, but in practice both PCPs and specialists frequently manage the associated care.¹² Specifically, we examine variation in the distribution of visits for 8 chronic conditions between primary and specialty care among MSSP ACOs and the factors affecting the variation. In addition, we descriptively compare this distribution of ambulatory care utilization within MSSP ACOs and a representative sample of non-ACO-attributed Medicare beneficiaries.

METHODS

We focused on Medicare beneficiaries who were attributed to MSSP ACOs in 2012–2013 as our study sample. We used 2013 Medicare claims and enrollment data as our primary data source to identify evaluation and management (E&M) ambulatory care visits. We also used the 2013 ACO Shared Savings Program Public Use File to obtain descriptive and structural information for each MSSP ACO that signed contracts with the Centers for Medicare & Medicaid Services (CMS) in 2012 and 2013. Finally, we use the American Community Survey and Census data for regional population variables.^{13–17}

We identified all beneficiaries diagnosed with any of the selected 8 chronic conditions before December 31, 2013 using Chronic Conditions Data Warehouse (CCW) files.¹⁸ We then identified all chronic condition E&M visits for all beneficiaries if a detailed claim line for the visit included 1 of 8 chronic conditions as the primary diagnosis code, and the procedure code was for an E&M visit.¹⁹ Finally, we removed duplicates using date, beneficiary ID, and provider ID for both files.

Using provider specialty codes on the claim, we identified the health care professional as a PCP, specialist, or advanced practice provider (APP). We categorized specialties of family practice, general practice, and internal medicine as PCPs. We also categorized visits that occurred in a Federally Qualified Health Center or Rural Health Center in the Medicare Outpatient file as a primary care visit. As APPs, including nurse practitioners and physician assistants, can practice in both primary and specialty care settings, we included these visits as a separate category.

ACO-level Characteristics

To identify ACO characteristics that are related with chronic condition management within primary care, we created a series of ACO-level measures. We first calculated the proportion of E&M visits conducted by a PCP as our dependent variable for all chronic conditions and for each of the 8 chronic conditions separately. We then constructed 11 variables under 5 categories that we hypothesized would be related to the proportion of chronic condition visits delivered by PCPs: patient demographics, patient population health complexity, ACO organizational structure, utilization for chronic conditions, and supply of providers. Patient population demographic variables included the percentage of ACO-attributed beneficiaries who were female and white. In addition, we included ZIP Code Tabulation Areas-level demographic variables, containing the percentage of individuals with a college or above degree, percentage living in a rural area, and median income. We weighted

these demographic variables based upon the ZIP Code Tabulation Areas in which ACO-attributed beneficiaries reside.

We measured patient population complexity by the percentage of ACO-attributed beneficiaries who became eligible through a disability or end-stage renal disease (ESRD) and the percentage of ACO-attributed beneficiaries with ≥ 3 of the 8 chronic conditions as identified by the CCW. Three or more chronic conditions was selected as a cut-off as it was the median number of chronic conditions in our study population, and has been used in other research on a Medicare ACO-enrolled population.²⁰ With regard to ACO organizational structure, we hypothesized a higher percentage of ACO-contracted primary care physicians would be positively associated with chronic condition management within primary care. We constructed this variable by dividing the number of contracted PCPs identified in the ACO Public Use File by the sum of contracted PCPs and specialists. To account for utilization, we calculated the mean number of E&M visits per beneficiary with 1 of 8 selected chronic conditions. Lastly, we included 2 supply variables: the number of unique PCPs and the number of unique specialists who provided at least 1 E&M visit per 1000 ACO-attributed beneficiaries with one of the 8 select chronic conditions. One ACO was excluded from the analysis as they did not report any contracted PCPs and did not participate the following year.

Statistical Analyses

We counted the number of visits for PCPs, specialists, and APPs for each of the 8 selected chronic conditions for each ACO. We then analyzed the variability between ACOs in the distribution of specialty and primary care visits using ordinary least squares (OLS) regression. Using the proportion of PCP visits as the dependent variable, we included the measures described above as ACO-level independent variables in the model. As the dependent variable was a proportion, we also tested a generalized linear model using a logit link and a binomial distribution, and found our results to be similar. We then utilized the OLS model to analyze the proportion of primary care visits for each of the 8 chronic conditions separately.

To determine if ACO beneficiary patterns of ambulatory care utilization were different than that of non-ACO beneficiaries, we used χ^2 tests to compare the distribution of primary care, specialty care, and APP visits of all MSSP ACO beneficiaries to that of a 5% random sample of traditional Medicare fee-for-service beneficiaries who were not attributed to an ACO.

All analyses were conducted using SAS 9.4 and Stata 14.1.

RESULTS

There was a total of 3,655,306 E&M visits with a primary diagnosis for 1 of 8 included chronic conditions among 1,130,139 ACO-attributed beneficiaries. We found that 94.3% of all ACO-attributed beneficiaries with an E&M visit had at least 1 of 8 chronic conditions as designated by the CCW. Among ACO-attributed beneficiaries with an E&M visit for 1 of 8 chronic conditions, hypertension (77.4%) and hyperlipidemia (65.9%) were the most common CCW diagnoses, while only 8.0% were diagnosed with asthma. Similarly, we found that 32.8% of the included chronic condition visits had a primary diagnosis of hypertension, while 2.9% had a primary diagnosis of asthma.

After restricting the ACOs to those with at least 1 contracted PCP, we were left with 219 of 220 ACOs that participated in the 2013 MSSP and included in the 2013 ACO public file (about half of these ACOs signed contracts with CMS in 2012 but their first performance year was 2013). The ACOs ranged in size from 3946 to 139,369 attributed beneficiaries, with an average attributed beneficiary population of 16,706 (median = 11,466). The average median income for ACO service areas was \$56,032, and the proportion of college-educated individuals was 28.4% (Table 1). ACO-attributed beneficiaries were mostly female (57.5%) and white (82.9%). The mean percentage of ACO-attributed beneficiaries who were eligible through ESRD or a disability was 15.7%, and those with ≥ 3 of the select chronic conditions averaged 71.7%, ranging to as high as 93.5%. ACO beneficiaries with one of the selected chronic conditions had on average 2.6 chronic condition visits during the year. Organizationally, just under 50% of ACO-contracted physicians were PCPs on average (median = 43.1%), with a range of 12.9%–100%. Finally, the average number of PCPs and specialist per 1000 ACO-attributed beneficiaries was 56.9 (median = 49.7) and 120.8 (median = 109.3), respectively.

The 219 ACOs had an average of 60.7% of chronic condition visits provided by PCPs (median = 60.4%) (Fig. 1). Large variation existed in PCP utilization between ACOs, ranging from 34.1% to 81%. We also saw differences in the use of PCPs by chronic condition. PCPs were overwhelmingly responsible for the management of hyperlipidemia (82.2%), hypertension (80.1%), and diabetes (69.2%). In contrast, PCPs were responsible for only 17.5% of the visits for depression.

In the overall OLS model (which included visits for all 8 conditions), displayed in Table 2, we found that demographically, the proportion of ACO-attributed beneficiaries who were white was negatively associated with the proportion of chronic condition visits delivered by PCPs (coef = -0.17 ; $P < 0.001$), as well as the proportion of the regional population who held a college degree (coef = -0.41 ; $P < 0.001$). With regard to patient complexity, ACOs with higher proportions of beneficiaries with ≥ 3 chronic conditions had lower levels of chronic condition visits delivered by PCPs (coef = -0.44 ; $P < 0.001$). The percent of beneficiaries eligible through ESRD or a disability was not statistically significant in the model. Organizationally, the proportion of ACO-contracted PCPs was significantly related to the proportion of PCP visits (coef = 0.13 ; $P < 0.001$), while the supply of specialists was negatively associated with the dependent variable (coef = -0.04 ; $P = 0.003$). Both the number of chronic condition visits per beneficiary (coef = 2.71 , $P = 0.06$) and the supply of PCPs (coef = 0.05 , $P = 0.07$) were moderately associated with the proportion of chronic condition visits delivered by PCPs in the overall model.

We observed some variation in this model across conditions (Table 3). Although coefficients remained in the same direction, their statistical significance varied based on the condition. The proportion of ACO-contracted physicians who were PCPs was consistent across the conditions, with the exception of depression. Patient complexity, race, and supply of PCPs and specialists were often statistically significant variables in condition-specific models. We also observe that the OLS model was less robust for certain conditions, such as hyperlipidemia ($R^2 = 0.23$) and CKD ($R^2 = 0.18$).

TABLE 1. Descriptive Data of Variables Used for ACO-level Analyses

Variables (%)	Mean	SD	Median	Minimum	Maximum
Percent of visits provided by a PCP	60.7	8.3	60.4	34.1	81.0
Median household income (\$)	56,032	14,725	52,882	22,140	100,808
Percent with a College degree or greater	28.4	8.5	26.9	11.8	50.7
Percent rural	19.0	17.6	14.0	0.01	77.0
Percent female	57.6	2.1	57.7	52.3	64.2
Percent white	82.9	17.3	88.1	7.2	98.4
Percent ESRD or disabled	15.7	7.0	14.5	5.3	47.2
Percent with an E&M visit for the selected conditions with ≥ 3 of the 8 selected chronic conditions	71.7	6.4	71.1	56.3	93.5
No. chronic condition visits per beneficiary with at least one of the selected chronic conditions	2.6	0.6	2.5	1.3	5.1
Percent of contracted providers who are PCPs	49.4	23.8	43.1	13.0	100
No. PCPs per 1000 attributed beneficiaries with 1 of 8 selected chronic conditions	56.9	31.6	49.7	18.5	313.7
No. specialists per 1000 attributed beneficiaries with 1 of 8 selected chronic conditions	120.8	56.3	109.3	40.4	328.1

Analysis is at the ACO-level ($N = 219$). Median household income, percent with a college degree or greater, and the percent rural are measured at the zip-code level and is weighted based on the number of attributed beneficiaries who reside in the given zip-code. The percent female, the percent white, and the percent ESRD or disabled are based on Medicare enrollment data on attributed beneficiaries. Percent with an E&M visit for the selected conditions with ≥ 3 of the selected chronic conditions is based on Medicare claims data, as well as the Chronic Condition Warehouse file. Number of chronic condition visits per beneficiary with at least one of the selected chronic conditions is based on Medicare claims data and the Chronic Condition Warehouse file. Percent of contracted providers who are PCPs is based on the Public Use File from CMS. Number of PCPs and Number of Specialists per 1000 attributed beneficiaries with 1 of 8 chronic conditions is based on Medicare claims data and the Chronic Condition Warehouse. For these 2 measures, PCPs and Specialists were included if they provided an E&M service to one of the attributed beneficiaries with 1 of 8 selected chronic conditions.

ACO indicates Accountable Care Organizations; E&M, evaluation and management; ESRD, end-stage renal disease; PCP, primary care provider.

Comparison With Non-ACO-attributed Beneficiaries

Among the sample of Medicare beneficiaries who were not attributed to an ACO, there were 3,110,683 E&M visits among 1,014,351 beneficiaries. We identified statistically significant differences in demographic characteristics and chronic condition prevalence between the 2 groups; however, the differences were small (Appendix Table A1). The ACO beneficiaries had 60.0% of all chronic condition E&M visits conducted by a PCP, compared with 60.4% among

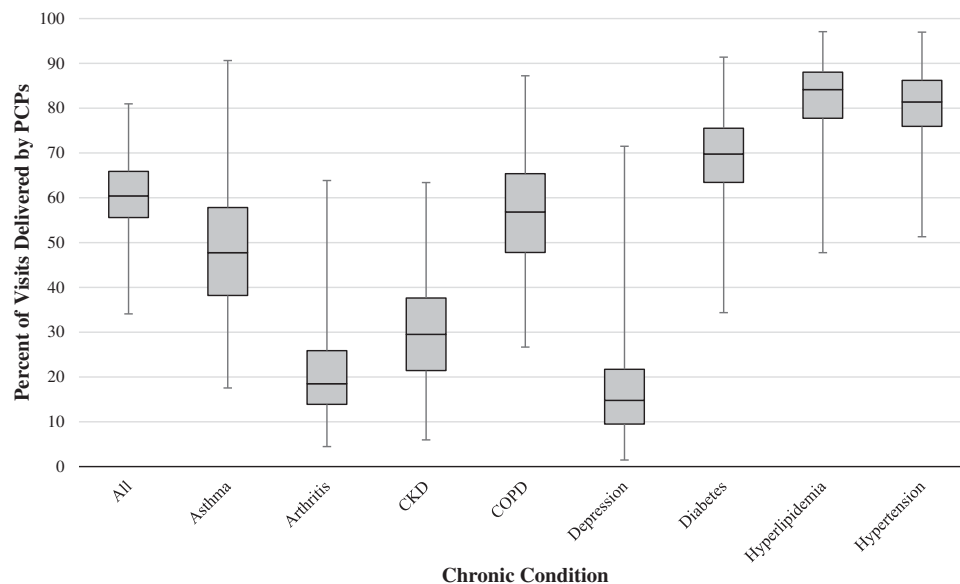


FIGURE 1. Box-and-whisker plots of the percentage of chronic condition visits delivered by PCPs, by condition, 2013 (N = 219). Analysis is at the Accountable Care Organizations level (N = 219 for each box-and-whisker plot). “All” includes visits for each of the 8 chronic conditions. The y-axis represents percentage. Whiskers indicate the maximum and minimum values among the 219 observations. CKD indicates chronic kidney disease; COPD, chronic obstructive pulmonary disease; PCPs, primary care providers.

the non-ACO group. APP visits made up 4.7% and 5.4% of the ACO and non-ACO group visits, respectively.

The χ^2 tests on the distribution of PCP, specialist, and APP visits for each chronic condition between ACO and non-ACO groups were statistically significant at the 0.01 level. However, the distribution of visits across provider types were similar for the ACO and non-ACO populations for each chronic condition, as differences ranged from 0.0% to 3.2%. The proportion of primary care visits was slightly higher in the ACO group for CKD, diabetes, hyperlipidemia and hypertension, and the reverse for the remaining 4 conditions.

CONCLUSIONS

In this study, we sought to understand how visits for certain chronic conditions were distributed between PCPs and specialists within MSSP ACOs and the factors that were related

to primary care management of chronic conditions within ACOs. Although in aggregate we did not find large differences between ACO and non-ACO-attributed beneficiaries, we did find notable variation across ACOs. Organizationally, ACOs with a higher proportion of contracted physicians who were PCPs had higher proportions of chronic condition visits that were delivered by PCPs. This relationship was consistent for 7 of the chronic conditions we included, with the one exception being depression. In addition, ACOs with more white beneficiaries, with higher prevalence of ≥ 3 comorbidities, in areas with larger proportions of college-educated individuals, and with greater numbers of specialists had a smaller share of chronic condition visits delivered by PCPs.

Our findings provide an indication of how MSSP ACOs have organized care for chronic conditions early in the program. As stated above, ACOs are incentivized to provide appropriate care in the least expensive setting possible; however, it does not

TABLE 2. Findings From Overall OLS Model (Dependent Variable: Percent of Primary Care Visits Across all 8 Chronic Conditions)

Variables	Coefficients	Robust SE	P > t	95% CI
Median household income	0.00001	0.00007	0.842	−0.0001 to 0.0002
Percent with a college degree or greater	−0.413	0.127	0.001	−0.664 to −0.163
Percent rural	0.032	0.042	0.438	−0.05 to 0.114
Percent female	−0.066	0.23	0.773	−0.519 to 0.386
Percent white	−0.166	0.035	< 0.001	−0.235 to −0.097
Percent ESRD or disabled	0.01	0.074	0.898	−0.137 to 0.156
Percent with an E&M visit for the selected conditions with ≥ 3 of the selected chronic conditions	−0.444	0.106	< 0.001	−0.652 to −0.236
No. chronic condition visits per beneficiary with at least 1 of 8 selected chronic conditions	2.712	1.432	0.06	−0.110 to 5.54
Percent of contracted providers who are PCPs	0.128	0.019	< 0.001	0.09–0.166
No. PCPs per 1000 attributed beneficiaries with 1 of 8 selected chronic conditions	0.05	0.027	0.07	−0.004 to 0.103
No. specialists per 1000 attributed beneficiaries with 1 of 8 selected chronic conditions	−0.038	0.012	0.003	−0.062 to −0.013

$R^2 = 0.5194$. Pregibon's link test for model specification and Ramsey's Regression Equation Specification Error Test for omitted variables both were not statistically significant. See Table 1 for a description of each independent variable.

CI indicates confidence interval; E&M, evaluation and management; ESRD, end-stage renal disease; OLS, ordinary least squares.

TABLE 3. Findings From OLS Condition-specific Models (Dependent Variable: Percent of Primary Care Visits for the Specific Chronic Condition)

Variables	Arthritis	Asthma	CKD	COPD	Depression	Diabetes	Hyperlipidemia	Hypertension
Median household income	0.00003	0.0002	-0.00007	0.00005	-0.00008	-0.000008	-0.000008	-0.0001
Percent with a College degree or greater	-0.272	-0.480	-0.106	-0.412	-0.261	-0.439*	-0.292*	-0.169
Percent rural	-0.017	-0.043	0.006	-0.004	0.162**	-0.018	0.019	0.022
Percent female	-0.427	-0.972	-1.189**	-1.078*	-0.565	-0.125	0.533	0.118
Percent white	-0.207***	-0.343***	-0.195*	-0.176*	-0.134*	-0.099*	-0.027	-0.073
Percent ESRD or disabled	0.122	0.404*	-0.227	0.34*	-0.201	0.156	-0.006	0.061
Percent with an E&M visit for the selected conditions with ≥ 3 of the selected chronic conditions	-0.042	-0.530*	0.367	-0.401	-0.744**	-0.541***	-0.371*	-0.465***
No. chronic condition visits per beneficiary with at least 1 of 8 selected chronic conditions	1.039	-2.116	-4.237	0.314	1.357	2.938	3.819*	-0.153
Percent of contracted providers who are PCPs	0.087***	0.155***	0.08*	0.164***	-0.019	0.143***	0.094***	0.096***
No. PCPs per 1000 attributed beneficiaries with 1 of 8 selected chronic conditions	0.12***	0.116*	0.073	0.081	0.157**	0.077*	0.008	-0.026
No. specialists per 1000 attributed beneficiaries with 1 of 8 selected chronic conditions	-0.07***	-0.038	-0.027	-0.04	-0.058**	-0.061***	-0.023	-0.02
R ²	0.4800	0.2645	0.1760	0.3002	0.3496	0.4109	0.2310	0.3432

See Table 1 for a description of each independent variable. Pregibon's link test for model specification and Ramsey's RESET for omitted variables both were not statistically significant for the arthritis, asthma, CKD and COPD condition-specific models. Ramsey's RESET test was statistically significant for the diabetes condition-specific model. Both Pregibon's link test and Ramsey's RESET test were statistically significant for the depression, hyperlipidemia, and hypertension condition-specific models.

CKD indicates chronic kidney disease; COPD, chronic obstructive pulmonary disease; E&M, evaluation and management; ESRD, end-stage renal disease; OLS, ordinary least squares; PCP, primary care providers; RESET, Regression Equation Specification Error Test.

* $P < 0.05$.

** $P < 0.01$.

*** $P < 0.001$.

appear that early in implementation ACOs have, at least as a group, transitioned chronic care into primary care compared with care for non-ACO Medicare beneficiaries. This could be for a number of reasons. First, ACOs may have focused on "lower hanging fruit" that would result in greater cost savings, such as the overuse of postacute care.²¹ Second, patients accustomed to regular appointments with specialists as their usual source of care for their chronic conditions may be unwilling to transition that care to their PCPs (assuming they have one), and indeed could be detrimental to their care in some cases. Therefore, a measurable shift to chronic condition care in the primary care setting may not be detectable in the short term.

Another factor is that the structure of the contracted ACO network and the supply of specialists seems to matter. ACOs located in areas with a larger numbers of specialists may not be able to shift chronic condition care to the primary care setting due to existing referral practices and patient-provider relationships. ACOs with a larger proportion of contracted PCPs may have formed their ACOs with the structure and belief in comprehensive primary care as an effective strategic approach that was already in place. A study by Herrel et al²² characterized this measure as the ACO's "PCP Focus"; however, the authors did not find a relationship between either utilization or savings and PCP Focus. In tandem, our results suggest that the organization of the ACO matters as to where beneficiaries receive their care, but as of yet have not delivered in reducing expenditures. In addition, our results indicate that ACOs have not come from the same place organizationally, and therefore may or may not shift chronic care to PCPs at different paces depending on these organizational and likely strategic factors.

The proportion of chronic condition visits varied not only by ACO, but by condition. The proportion of visits for

hyperlipidemia and hypertension were high (over 80% each provided by PCPs) with less variation across ACOs than for the other 6 conditions. In contrast, the proportion of visits delivered by PCPs for depression, CKD, and arthritis were relatively low. ACOs seeking to shift more chronic condition management into primary care may focus on specialist visits for conditions with already high primary care utilization (ie, normally managed by PCPs), or on conditions with greater specialist utilization where there is more opportunity for a shift in the setting of care. The degree of variation among the latter conditions is of interest and our findings indicate that for arthritis and depression, the supply of PCPs and specialists are important factors, while the number of contracted PCPs was only significant for CKD and arthritis. This suggests that while ACO structure is mutable, ACOs in areas with larger supplies of specialists may need to focus on referral patterns and not just their own contracted physicians to shift chronic condition management.

Our study is subject to a few important limitations. First, our approach was cross-sectional as we looked at 1 year of data. It may be that 2013 was not representative and that ACOs changed in subsequent years. This study functions as an early look at the broad research question of how primary care is used within an ACO. Second, we measured an ACO's structure by percentage of contracted physicians who were PCPs. ACOs may have varying levels of contact and coordination with noncontracted clinicians who serve their patients, which may affect how primary care manages chronic conditions for that ACO's population. Third, we did not measure any outcomes related to quality or acute events, and thus cannot determine if this distribution of visits between primary and specialty care is appropriate. Similarly, while we did control for the complexity of the ACO's patient population, we may not have identified other condition-specific systematic

differences between ACO patient populations that would be associated with higher proportions of specialty care visits. Fourth, state-level policies or practices may affect ACO structure. We were unable to include a state-level variable in our model due to insufficient sample size. Last, we decided to restrict our analyses to E&M procedure codes to ensure comparability between PCP and specialist utilization. This decision is a trade-off between comparability and comprehensiveness, as we likely excluded a number of visits (primarily to specialists) where specific procedures were performed. This may have affected our measurement of depression visits the most, as no visits solely for psychotherapy or counseling were included.

Despite these limitations, our analysis demonstrates that some ACOs utilize PCPs to manage chronic conditions to a greater extent than others. The degree to which PCPs manage chronic conditions is related to both patient population, chronic condition, and organizational factors. Many ACOs may underutilize PCPs in this role, and thus could actively shift care to less expensive primary care for potential savings to payers. Barriers to that shift could include low numbers of PCPs contracted in the ACO, and existing referral patterns and patient relationships with specialists.

APPENDIX

TABLE A1. Comparison of ACO and Non-ACO-attributed Sample Groups, 2013

	ACO Group	Non-ACO-attributed Sample Group	P
No. enrollees	1,130,139	1,014,871	
Percent female	60.5	60.3	0.015
Percent white	82.4	82.4	0.150
Percent eligible with ESRD/disability	17.9	16.8	<0.001
Chronic condition (%)			
Asthma	7.8	7.2	<0.001
Arthritis	38.5	38.9	<0.001
CKD	21.4	20.4	<0.001
COPD	15.1	15	0.012
Depression	20.4	18.9	<0.001
Diabetes	38.3	37.8	<0.001
Hyperlipidemia	64.1	61.1	<0.001
Hypertension	75.3	75.3	0.225
No. the 8 selected chronic conditions [mean (SD)]	2.8 (1.5)	2.7 (1.5)	<0.001
Median number of the 8 selected chronic conditions	3	3	
No. ambulatory care visits for the 8 selected chronic conditions [mean (SD)]	3.2 (2.8)	3.1 (2.7)	<0.001

ACO indicates Accountable Care Organizations; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease.

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