Patient Medical Group Continuity and Healthcare Utilization

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Objectives: To measure continuity among medical groups of insured patients over a 5-year period and to test whether group continuity of care is associated with healthcare utilization and costs.

Study Design: Retrospective observational study.

Methods: We studied natural patient behavior by using insurance claims data in the absence of any medical group or health plan incentives for continuity. We conducted the study through a retrospective analysis of administrative data of 121,780 patients enrolled from 2005 to 2009 in HealthPartners, a large nonprofit Minnesota health plan. Each year, patients were attributed to the medical group where they received the greatest number of primary care visits. Multilevel multiple regression models were used to estimate the association of annualized medical cost and utilization with attribution and continuity categories.

Results: Although patients with high medical group continuity were older and had more comorbidities than patients with medium or low continuity of care, they had a consistently lower probability of any inpatient expenditure or any emergency department (ED) utilization and lower total medical costs.

Conclusions: Although a small proportion, health plan members who visited a primary care provider but had low or medium continuity among medical groups had higher inpatient and ED use than those with high continuity. Improved coordination and integration has potential to lower utilization and costs in this group.

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For author information and disclosures, see end of text.

Fisher et al proposed the accountable care organization (ACO) as a way to increase coordination of care and financial responsibility while lowering costs and improving quality.[1] The ACO, an organization of physicians and institutional providers such as hospitals, home health agencies, and nursing homes, would be accountable for all of the care for a defined population.[2] The Patient Protection and Affordable Care Act authorized Medicare to contract with ACOs to provide care for fee-for-service beneficiaries beginning in January 2012.[3] The Medicare contracts include a shared savings program to give financial incentive to ACOs to improve quality and contain costs.[4] As the methods to define patient populations, quality measures, and cost containment goals are being developed for the Medicare Shared Savings Program, private payers have also been testing ACO models for their insured populations.[5-8]

The ACO model is not limited to a single organizational structure. Five types of arrangements have been suggested: integrated delivery systems, multispecialty group practices, physician-hospital organizations, independent practice associations, and virtual physician organizations.[9]

Central to the ACO concept is the organization's accountability for a defined population. Defining that population requires assigning each patient to a clinician and, by extension, to the ACO. The assignment, or attribution, method can take various forms. It can be retrospective or prospective, can involve single or multiple clinicians, or can be based on patient choice, patient visits, or dollars.[7,10] Regardless of the method, attribution is assignment of a patient to an ACO for a single year. As patients seek care from different clinicians from year to year, they may be attributed to different ACOs. Because the ACO assumes financial risk for its attributed patients, the ACO will be concerned not only about the annual attribution but also about the stability of the population and associated financial impacts.

Large medical groups are organizations of healthcare providers that contract with health plans to provide medical care to health plan members. They are potential ACOs because they have the ability to implement clinical, managerial, and financial systems to coordinate the entire spectrum of patient care.[11] In this study we explored the importance of patient mobility among medical groups as a proxy for understanding patient mobility among ACOs.

Our objectives were to measure continuity of insured patients

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among medical groups over a 5-year period and to test whether group continuity of care was associated with healthcare utilization and costs. Thus, it was a retrospective observational study of natural patient behavior tracked through insurance claims data in the absence of any medical group or health plan incentives for continuity. We addressed 2 questions relevant to ACO success. (1) What patterns of patient continuity could be identified? (2) What were the associations among those continuity patterns and total medical costs, inpatient utilization and costs, and emergency department (ED) utilization? Our results will be helpful to policy makers as they evaluate the potential for ACOs to deliver cost savings and as ACOs evaluate the risk they are assuming for their patient populations.

Take-Away Points

Patient continuity with a medical group and its relationship to medical expenditures and healthcare utilization are of interest to accountable care organizations.

- Among study patients with at least 1 annual visit to a primary care provider, the majority did not move among medical groups for primary care.
- Patients who moved among medical groups the most often had the highest total costs and the greatest use of inpatient and emergency department care.
- Although a small proportion, patients who moved among medical groups the most often had the highest total costs and represent an opportunity for better management.

METHODS

We compared annual medical utilization and costs in patient groups, defined by their pattern of medical group attribution and continuity over a 5-year period. Each year, patients were attributed to the medical group where they received the greatest number of primary care visits, without regard to numbers of providers seen. In case of ties, patients were attributed to the medical group where the most recent visit occurred. Primary care visits were defined by location and specialty of the billing physician and included the following specialties: family medicine, internal medicine, pediatrics, geriatrics, and obstetrics and gynecology. Nurse practitioner and physician assistant visits were also included. Patients without primary care visits in a year were not attributed in that year.

Patients were categorized into 3 groups on the basis of their attribution: not attributed (NotAtt), or patients who were not attributable to a medical group in any of the 5 study years; infrequently attributed (InfAtt), or patients who were attributed only 1 or 2 years during the study period; and frequently attributed (FreqAtt), or patients who were attributable for 3 or more years.

The FreqAtt group was further segmented into 3 continuity categories according to the number of moves the patients made among medical groups: high continuity (HiCont), or patients who were always attributable to the same medical group; medium continuity (MedCont), or patients who made 1 move between medical groups; and low continuity (LowCont), or patients who made 2 or more moves among medical groups. A move was defined as a change in attributed medical group. For example, a member who was attributed to medical group A in 2005, who was not attributable in 2006, and who was attributed to medical group A in 2007, did not move. The same member who was not attributable in 2008 and who was attributed to medical group B in 2009 moved once. Patient moves among clinics in the same medical group were not considered moves for this study.

Study Population and Data Sources

This was a retrospective analysis of administrative data from 2005 to 2009 from HealthPartners, a large nonprofit Minnesota health plan with more than 600,000 members. All HealthPartners members during the study period were eligible if they met the following criteria: (1) at least 10 months of health plan enrollment in each study year; (2) aged 19 years or older on January 1, 2005; (3) pharmacy coverage for each study year; and (4) commercial, Medicaid, or Medicare insurance coverage.

The medical groups included in the study all provided primary care and were equally divided between those having 7 to 40 physicians, 41 to 110 physicians, and more than 110 physicians. Thirty-seven percent were single-specialty primary care groups, and 54% were located outside the metropolitan area of Minneapolis-St. Paul.

Utilization, costs, and patient demographic data came from HealthPartners administrative databases and included information describing type of insurance coverage, diagnostic codes, procedure codes, billed amounts, plan reimbursed amounts, and member liability (ie, patient paid). These data were used to identify major medical comorbidities for all members (asthma, cardiovascular disease, congestive heart failure, chronic obstructive pulmonary disease, depression, and diabetes).

Yearly total cost of care was defined as the total amount paid for medical services to medical providers during the year. To avoid variation from differences in contracted reimbursement rates across medical groups, all costs were based on a standardized measure, the HealthPartners relative resource value unit. These units are based on Centers for Medicare & Medicaid Services relative value units, inpatient diagnosis-related groups, and ambulatory payment classification weights. Use of standardized costs for each Current Procedural Ter-

minology code, diagnosis-related group, and pharmacy claim made patient costs independent of the provider contract or type of insurance coverage. All costs are expressed as 2005 dollars. Costs and utilization counts were annualized for members with fewer than 12 months of enrollment in a given year.

Analysis

Multilevel multiple regression models were used to estimate the association of annualized medical cost and utilization with attribution and continuity categories (NotAtt, InfAtt, HiCont, MedCont, LowCont). To account for within-subject correlation across observation years, a generalized estimating equations approach was used. For continuous outcomes of total and inpatient costs, a 2-part Heckman estimator was used.[12] First, the association between patient categories and positive expenditure was determined by logistic regression. Second, the association between categories and expenditures was estimated for those with expenditures. Because both continuous outcomes were heavily skewed, a log transformation with Duan's smearing estimator was used.[13,14] For the count outcome of ED utilization, a zero-inflated Poisson model was used, first with logistic regression to estimate the association between patient categories and positive ED utilization, and second, with Poisson regression to estimate the association between categories and number of ED visits among patients with ED use.

The multivariate models adjusted for patient demographics, complexity, comorbidities, and study year. Number of medications was our measure of patient complexity because it was reliably available from pharmacy claims data, and it is a validated, transparent, and easily reproducible measure.[15] We included interaction and polynomial terms that improved model performance.

To more easily interpret model results, we estimated predicted outcomes (probabilities, costs, and utilization) for each patient category, with covariate values set at the mean value within each category. We also estimated the marginal effect of changing category assignment. The predicted outcomes for the average MedCont and LowCont patients were estimated as if they were HiCont patients. These estimates quantified the impact of patient continuity.

RESULTS

We identified 121,780 patients who were covered by HealthPartners insurance and met the inclusion criteria. Among patients enrolled in 2005, 28% were excluded because of age, and 37% were excluded because they were not enrolled with HealthPartners in all years. An additional 16% were excluded because of noncontinuous pharmacy coverage or fewer than 10 months of enrollment each year.

In 2007, the study midpoint, the average patient age was 50.5 years, 52.4% were female, and most patients had commercial insurance (88.2%). Roughly 7% (7.3%) were identified as having asthma, 3.3% coronary artery disease, 0.8% congestive heart failure, 2.6% chronic obstructive pulmonary disease, 19.2% depression, and 7.5% diabetes. Total costs averaged $8547 per patient, and there were an average of 2.2 primary care visits per patient.

Characteristics and utilization of the study population by attribution and continuity categories are presented in **Table 1**. Of the 121,780 patients, 5031 (4%) were not attributable (NotAtt) in any of the 5 years, and 14,590 (12%) were categorized as InfAtt. The NotAtt and InfAtt patients were younger, included fewer females, and were less likely to have chronic conditions. They also had the lowest average total annual costs, lowest inpatient hospitalization rate, and lowest rate of ED use.

Most (84%) were categorized as FreqAtt. They had the highest average age (51.5 years), the largest percentage of females (57.1%), and the highest prevalence of chronic conditions, and were more likely than patients in the other categories to have Medicare coverage.

Most of the FreqAtt patients were categorized as HiCont. That group was older (52.1 years) and mostly female (57.0%), and had the highest prevalence of all chronic diseases except depression. Eight percent (7775 of 102,159) of FreqAtt patients were categorized as MedCont, and 3% (3237 of 102,159) were LowCont. The MedCont and LowCont groups were younger than the HiCont group but were similar in the proportion of females and prevalence of asthma and depression.

Regression Results

There were several significant covariates in the multivariate analysis. For total and inpatient costs, the outcomes increased with age, were higher for females, and were higher for those insured by Medicare or Medicaid. Costs and utilization trended upward over time and increased with care complexity (number of prescription medications) and comorbidities. Patients with asthma, coronary artery disease, congestive heart failure, chronic obstructive pulmonary disease, and depression had marginally higher costs. Surprisingly, patients with diabetes had slightly lower costs than patients without comorbidities, after adjusting for covariates. However, because the claims-based algorithms used to identify diabetes required 2 outpatient diagnostic codes or 1 inpatient diagnostic code and an active prescription, they indicated active diabetes management. Costs for diabetes associated with medication management and comorbidites were reflected in covariates; therefore, the result can be interpreted as the marginal im-

Table 1. Study Population Characteristics and Utilization by Attribution and Continuity Category, 2007[a]

Characteristic	NotAtt	InfAtt	FreqAtt			*P*
			HiCont	MedCont	LowCont	
No. (%)	5031 (4)	14,590 (12)	91,147 (75)	7775 (6)	3237 (3)	
Age, mean, y[b]	46.7	45.0	52.1	47.3	44.7	<.0001
Female, %[c]	30.9	27.0	57.0	56.4	61.1	<.0001
Commercial insurance, %[c]	95.8	96.0	86.1	91.1	94.2	<.0001
Medicaid insurance, %[c]	1.5	1.5	1.9	1.2	0.8	<.0001
Medicare insurance, %[c]	2.7	2.5	12.0	7.7	5.0	<.0001
Asthma, %[c]	1.5	1.9	8.4	8.0	8.0	<.0001
CAD, %[c]	0.6	0.7	4.0	2.8	2.0	<.0001
CHF, %[c]	0.3	0.2	1.0	0.6	0.4	<.0001
COPD, %[c]	0.6	0.7	3.1	2.3	1.8	<.0001
Depression, %[c]	4.6	5.4	21.7	22.8	23.5	<.0001
Diabetes, %[c]	1.6	1.3	9.0	7.0	4.2	<.0001
Medications ≥2, mean[d]	0.5	0.5	3.2	2.7	2.3	<.0001
Total costs, mean, $[b]	2203	2520	9672	10,290	9737	<.0001
IP visits per 1000 patients[b]	20.9	27.0	101.7	125.3	124.7	<.0001
IP costs, mean, $[b,e]	28,035	29,892	30,735	32,682	26,050	.2723
ED visits per 1000 patients[b]	50.6	69.1	152.4	212.6	188.9	<.0001
ED visits, mean[b,e]	1.33	1.33	1.48	1.55	1.50	.0003

CAD indicates coronary artery disease; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; ED, emergency department; IP, inpatient; PC, primary care visit.
[a]NotAtt indicates patients not attributable in any of 5 years; InfAtt, patients attributed in 1 or 2 of 5 years; FreqAtt, patients attributed in 3 or more years; HiCont, no moves among medical groups; MedCont, 1 move; LowCont, 2 or more moves.
[b]Significance determined by analysis of variance.
[c]Significance determined by the χ^2 test.
[d]Medications ≥2, number of different medications prescribed in a year (0, 2, or more).
[e]Mean for patients with positive cost or utilization.

pact of behavioral diabetes management, after adjusting for covariates.

The probability of positive ED utilization decreased with age and was less likely among females than males. The number of ED visits also decreased with age, but was not significantly different for females than for males.

Estimated model coefficients for patient attribution and continuity category variables are displayed in Table 2. Estimates from the positive versus zero utilization models indicate likelihood of utilization compared with the HiCont group. The NotAtt and InfAtt groups had significantly lower likelihood of positive total costs, inpatient costs, and ED visits, while the LowCont and MedCont groups had significantly higher likelihood of positive inpatient costs and ED visits compared with the HiCont group. Results for probability of positive total costs were mixed for the LowCont (more likely) and MedCont (less likely) groups. Estimates from the models on positive values are the log percentage differences of utilization compared with the HiCont group; positive estimates indicate higher utilization. Among the patients with positive utilization, the LowCont (18.8%) and MedCont (8.7%) groups had significantly higher total costs than the HiCont group. The NotAtt (12.8%), InfAtt (10.9%), and MedCont (4.6%) groups had significantly higher inpatient costs, and the MedCont (3.8%) had significantly more ED visits than the HiCont group.

Predicted outcomes estimated from model results on the average patient within each category are presented in Table 3. The predicted probability of positive total costs, inpatient costs, and ED use was lowest for the NotAtt and InfAtt categories. Across the continuity categories, the HiCont group had the lowest probability of inpatient (6.4%) and ED (9.6%) use. The NotAtt and InfAtt groups had the lowest predicted amounts for total cost and ED visits. HiCont patients had the highest predicted costs; at $9184, they were significantly higher than the costs for all other categories. However, those cost estimates reflected the average age, sex, complexity, comorbidity, and insurance type makeup of each category. Hi-

Table 2. Impact of Patient Attribution and Continuity Category on Utilization[a]

	Positive Versus Zero Utilization Models[b]			Utilization Models on Positive Values Only[c]		
Variable	**β Estimate**	**SE**	***P***	**β Estimate**	**SE**	***P***
Total costs[d]						
NotAtt	−3.7822	0.0248	<.0001	−1.1652	0.0266	<.0001
InfAtt	−2.6980	0.0168	<.0001	−0.7416	0.0100	<.0001
LowCont	0.2351	0.0616	.0001	0.1880	0.0139	<.0001
MedCont	−0.1901	0.0345	<.0001	0.0872	0.0093	<.0001
Inpatient costs[d]						
NotAtt	−0.8540	0.0570	<.0001	0.1281	0.0479	.0074
InfAtt	−0.4686	0.0300	<.0001	0.1092	0.0224	<.0001
LowCont	0.3026	0.0342	<.0001	0.0145	0.0232	.5318
MedCont	0.2269	0.0234	<.0001	0.0462	0.0156	.0032
ED visits[e]						
NotAtt	−0.5440	0.0380	<.0001	−0.0368	0.0311	.2373
InfAtt	−0.2538	0.0212	<.0001	0.0181	0.0117	.1230
LowCont	0.2906	0.0309	<.0001	0.0292	0.0168	.0828
MedCont	0.2935	0.0202	<.0001	0.0381	0.0152	.0121

ED indicates emergency department.
[a]NotAtt indicates patients not attributable in any of 5 years; InfAtt, patients attributed in 1 or 2 of 5 years; FreqAtt, patients attributed in 3 or more years; HiCont, patients attributed in 3 or more years and no moves among medical groups (reference group); MedCont, patients attributed in 3 or more years and 1 move among medical groups; LowCont, patients attributed in 3 or more years and 2 or more moves among medical groups.
[b]Generalized estimating equations logistic regression with random effects was used to model zero versus nonzero utilization.
[c]Models were adjusted for age, sex, insurance type, complexity (number of medications), comorbidities (asthma, coronary heart disease, congestive heart failure, chronic obstructive pulmonary disease, depression, diabetes), and study year.
[d]Generalized estimating equations regression of log-transformed dependent variable was used to model positive costs among patients with positive costs.
[e]Poisson regression was used to model positive visits among patients with positive visits.

Cont patients had higher costs because they were older, more likely to be female, and more likely to have comorbidities.

To illustrate the effect of continuity, the probabilities and amounts of utilization for LowCont and MedCont patients were estimated as if they had high continuity (Table 4). Continuity had a significant effect on the probabilities of positive inpatient and ED utilization, and predicted total costs. The predicted probabilities of positive inpatient expenditure (5.5%, 5.8%) and positive ED visits (9.1%, 9.5%) for the average LowCont patient and MedCont patient, respectively, would drop significantly if they were in the HiCont category. Predicted annual costs would be 17% lower for the average LowCont patient and 8% lower for the average MedCont patient if they were in the HiCont category.

DISCUSSION

The interesting comparisons in our study were among the majority of members who made at least 1 annual visit to a primary care provider in 3 or more of the study years. In that group, we found that although HiCont patients were older and had more comorbidities than MedCont or LowCont patients, they had a consistently lower probability of positive inpatient expenditure or positive ED utilization and lower total medical costs. This finding extends our previous work showing that HiCont in a single medical group or clinic is associated with lower ambulatory costs for primary and specialty care.[16] The association of continuity and utilization is important for medical group management as these groups take on financial risks for total cost of care as ACOs and invest their scarce resources in systems to improve their abilities to manage comprehensive medical utilization. In addition to building technical, managerial, and financial systems, medical groups will also want to understand patient mobility.

We found that among health plan members who were insured during the entire 5-year study period, the minority who did not visit a primary care provider in any year, or who visited in only 1 or 2 of the 5 years, were young and healthy, and had low overall healthcare utilization and associated costs. This is not surprising.

Our results show that health plan members who visited a primary care provider but had medium or low continuity among medical groups had greater inpatient and ED use than those with high continuity. Our results suggest that the medium- and low-continuity patients had total costs of care 9% to 18% higher than those of the high-continuity patients (Table

Table 3. Predicted Outcomes by Patient Attribution and Continuity Category[a,b]

Outcome	NotAtt, mean (95% CI)	InfAtt, mean (95% CI)	FreqAtt, mean (95% CI)		
			HiCont	MedCont	LowCont
Probability of positive outcome					
Total cost[c]	46.8% (45.6%-47.9%)	71.1% (70.5%-71.7%)	98.2% (98.1%-98.2%)	97.4% (97.3%-97.6%)	98.2% (98.0%-98.4%)
Inpatient cost[c]	1.4% (1.2%-1.5%)	2.0% (1.9%-2.1%)	6.4% (6.2%-6.5%)	7.2% (6.9%-7.5%)	7.3% (6.8%-7.7%)
ED visit[c]	3.8% (3.5%-4.1%)	5.2% (5.0%-5.4%)	9.6% (9.4%-9.8%)	12.2% (11.8%-12.7%)	11.8% (11.2%-12.5%)
Predicted amount, if positive outcome					
Total cost, $[d]	1318 (1250-1389)	1685 (1654-1718)	9184 (9111-9257)	8404 (8251-8559)	8105 (7889-8331)
Inpatient cost, $[d]	31,186 (28,372-34,279)	28,147 (26,895-29,458)	29,148 (28,602-29,706)	27,991 (27,061-28,954)	24,555 (23,555-25,739)
ED visit, n[e]	1.21 (1.14-1.29)	1.27 (1.24-1.31)	1.39 (1.36-1.42)	1.43 (1.38-1.48)	1.40 (1.34-1.45)

CI indicates confidence interval; ED, emergency department.
[a]Predicted outcomes and 95% CIs were evaluated at the mean values of covariates within each category. NotAtt indicates patients not attributable in any of 5 years; InfAtt, patients attributed in 1 or 2 of 5 years; FreqAtt, patients attributed in 3 or more years; HiCont, patients attributed in 3 or more years and no moves among medical groups; MedCont, patients attributed in 3 or more years and 1 move among medical groups; LowCont, patients attributed in 3 or more years and 2 or more moves among medical groups.
[b]Models were adjusted for age, sex, insurance type, complexity (number of medications), comorbidities (asthma, coronary heart disease, congestive heart failure, chronic obstructive pulmonary disease, depression, diabetes), and study year.
[c]Generalized estimating equations logistic regression with random effects was used to model zero versus nonzero utilization.
[d]Generalized estimating equations regression of log-transformed dependent variable was used to model positive costs among patients with positive costs. Costs are in 2005 dollars.
[e]Poisson regression was used to model positive visits among patients with positive visits.

Table 4. Predicted Marginal Impact of Continuity on Low- and Medium-Continuity Categories[a,b]

Outcome	MedCont	MedCont as HiCont	LowCont	LowCont as HiCont
Probability of positive outcome				
Total cost[c]	97.4%	97.9%	98.2%	97.7%
Inpatient cost[c,d]	7.2%	5.8%	7.3%	5.5%
ED visit[c,d]	12.2%	9.5%	11.8%	9.1%
Predicted amount, if positive outcome				
Total cost, $[d,e]	8404	7701	8105	6716
Inpatient cost, $[e]	27,991	26,727	24,555	24,201
ED visit, n[f]	1.428	1.374	1.397	1.356

ED indicates emergency department.
[a]Predicted outcomes of average MedCont and LowCont patient evaluated as if patient were HiCont, with covariates equal to the mean values of the original category. NotAtt indicates patients not attributable in any of 5 years; InfAtt, patients attributed in 1 or 2 of 5 years; FreqAtt, patients attributed in 3 or more years; HiCont, patients attributed in 3 or more years and no moves among medical groups; MedCont, patients attributed in 3 or more years and 1 move among medical groups; LowCont, patients attributed in 3 or more years and 2 or more moves among medical groups.
[b]Models were adjusted for age, sex, insurance type, complexity (number of medications), comorbidities (asthma, coronary heart disease, congestive heart failure, chronic obstructive pulmonary disease, depression, diabetes), and study year.
[c]Generalized estimating equations logistic regression with random effects was used to model zero versus nonzero utilization.
[d]Statistically significant marginal impact, $P < .05$.
[e]Generalized estimating equations regression of log-transformed dependent variable was used to model positive costs among patients with positive costs. Costs are in 2005 dollars.
[f]Poisson regression was used to model positive visits among patients with positive visits.

2). These results support the published studies that found that patient stability with a primary care provider was associated with lower utilization and costs.[17-22]

Our study is limited by its use of data from a single Midwestern heath plan, which may not be representative of other markets and geographic areas because of differences in patients, care providers, medical group orientation, or payment and coverage arrangements. We excluded patients who were not enrolled with HealthPartners in any year or who had fewer than 10 months of enrollment in each year of our 5-year study. While the enrollment criteria greatly limited our sample, we could not include members with coverage gaps because the gaps led to missing data on our variables of interest, medical group attribution, and utilization.

We included covariates obtained from administrative claims data to adjust our utilization and cost models; however, they did not include perceived health status and socioeconomic status, and thus may not have fully adjusted for patient risk. Our definition of primary care included obstetrics and gynecology office visits because many young women view obstetrician/gynecologists as their primary care providers and visit them for routine preventive health visits. However, some of those visits may have been referrals for obstetrics care that resulted in high costs of delivery, potentially biasing results.

We also examined patient continuity under a single attribution method. Our focus was on the impact of a consistent source of care over time. However, these findings may be affected by how patients are attributed. Determining that impact was beyond the scope of the work, but it is an important topic for future work because consensus has not been reached on methodology.[10] While our analysis is limited to a single attribution methodology, it suggests that patient stability is an important consideration for ACOs.

Our study was of natural patient medical care–seeking behavior. Because the study is based on administrative data, we do not know the reasons for mobility. Although members had coverage from the same insurance carrier during all years of the study, they may have had a financial incentive to change medical groups. For example, contractual arrangements between the employer and the health plan may have resulted in a change in cost sharing, or their provider may have been placed in a more costly grouping. Patients also change providers for nonfinancial reasons such as dissatisfaction, relocation, or a change in medical needs. Although our study cannot address reasons that our members changed medical groups over time, the salient point for ACOs is the potential impact of patient mobility on financial results.

One might speculate on potential unintended consequences that could develop from health plan and payer actions to steer patients to selected providers. While the goal of the plans and payers may be to give patients incentive to seek care from high-quality, low-cost providers to reduce overall healthcare expenditures, the outcomes may be unexpected. Health plan and payer actions that encourage patient mobility in the name of cost savings may, in fact, result in higher medical costs. Given the popularity of provider tiering and related patient cost sharing, more study in this area is warranted.

CONCLUSIONS

Patient continuity with an ACO and its relationship to medical expenditures and healthcare utilization are of interest for financial risk management of ACO payment arrangements. We explored patient medical group continuity to better understand the potential impact of ACOs on the attainment of desired medical cost savings. A category of patients we called FreqAtt who are using healthcare services including primary care exhibit care-seeking behavior that is correlated with utilization and costs. Although a small proportion, patients who move among medical groups the most often have the highest total costs and the greatest use of inpatient and ED care. Improved coordination and integration have the potential to lower utilization and costs in this group.

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