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Authors

Wu, Frances M
Shortell, Stephen M
Lewis, Valerie A
et al.

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RESEARCH BRIEF

Assessing Differences between Early and Later Adopters of Accountable Care Organizations Using Taxonomic Analysis

Frances M. Wu, Stephen M. Shortell, Valerie A. Lewis, Carrie H. Colla, and Elliott S. Fisher

Objective. To compare early and later adopters of the accountable care organization (ACO) model, using the taxonomy of larger, integrated system; smaller, physician-led; and hybrid ACOs.

Data sources. The National Survey of ACOs, Waves 1 and 2.

Study design. Cluster analysis using the two-step clustering approach, validated using discriminant analysis. Wave 2 data analyzed separately to assess differences from Wave 1 and then data pooled across waves.

Findings. Compared to early ACOs, later adopter ACOs included a greater breadth of provider group types and a greater proportion self-reported as integrated delivery systems. When data from the two time periods were combined, a three-cluster solution similar to the original cluster solution emerged. Of the 251 ACOs, 31.1 percent were larger, integrated system ACOs; 45.0 percent were smaller physician-led ACOs; and 23.9 percent were hybrid ACOs—compared to 40.1 percent, 34.0 percent, and 25.9 percent from Wave 1 clusters, respectively.

Conclusions. While there are some differences between ACOs formed prior to August 2012 and those formed in the following year, the three-cluster taxonomy appears to best describe the types of ACOs in existence as of July 2013. The updated taxonomy can be used by researchers, policy makers, and health care organizations to support evaluation and continued development of ACOs.

Key Words. Accountable Care Organizations, Medicare, health care reform, health policy, delivery of health care

Accountable care organizations (ACOs) are a payment and delivery system reform initiative, whereby entities comprised of physician organizations, hospitals, or other provider organizations are contractually responsible for the quality and cost of care for a defined patient population. If participating

organizations are able to spend less than a benchmark amount to provide health care for their defined patient population, while simultaneously meeting predefined quality criteria, they are eligible to share in achieved savings.

The ACO landscape is changing rapidly. As the first group were accepted into the Medicare Shared Savings Program (MSSP) in April 2012, four additional groups of participating organizations have been added; there are now 424 ACOs established through Medicare that cover over 7.8 million beneficiaries (Centers for Medicare and Medicaid Services 2014a). Estimates from early 2015 show there are currently over 700 public and commercial ACOs across the country (Muhlestein 2015).

Given the continued evolution of ACOs, there has been interest in developing ways of describing and classifying ACOs. Our original taxonomy of ACOs was created using data from the earliest ACOs—formed as of August 2012—for assessing commonalities and differences (Shortell et al. 2014). The aim of the current analysis was to compare early ACOs formed as of August 2012 to later adopters of the model formed between September 2012 and July 2013, roughly a year later. We also seek to update the taxonomy by assessing whether the original cluster categories of ACOs have changed and whether new types have emerged.

Previous Research

Previous research identified three types of ACOs—larger, integrated delivery system (IDS) ACOs; smaller, physician-led ACOs; and hybrid ACOs—based on eight organizational attributes: size (number of provider FTE), number of types of participating provider organizations, scope of services offered, IDS status, percent of primary care clinicians, institutional leadership type, performance management strategies used for accountability, and prior experience with payment reform (Shortell et al. 2014). The taxonomy was primarily grounded in two theories of organizational behavior—resource dependence (Aldrich and Pfeffer 1976; Pfeffer and Salancik 1978; Davis and Cobb 2010)

Address correspondence to Frances M. Wu, Ph.D., Center for Innovation to Implementation, VA Palo Alto Health Care System, Center for Primary Care and Outcomes Research, Stanford University School of Medicine, 795 Willow Road, MPD-152, Menlo Park, CA 94025; e-mail: frances.wu2@va.gov. Stephen M. Shortell, Ph.D., M.B.A., M.P.H., is with the School of Public Health, University of California, Berkeley, Berkeley, CA. Valerie A. Lewis, Ph.D., Carrie H. Colla, Ph.D., and Elliott S. Fisher, M.D., are with The Dartmouth Institute for Health Policy and Clinical Practice, Geisel School of Medicine at Dartmouth College, Hanover, NH.

and institutional theory (Meyer and Rowan 1977; DiMaggio and Powell 1983; Scott et al. 2000).

METHODS

In the analysis, we use both Wave 1 and 2 data of the National Survey of Accountable Care Organizations (NSACO). The Wave 1 survey included 292 possibly eligible ACOs with a response rate of 70 percent (Colla et al. 2014). For Wave 2, a sample of potential ACOs was created using various web-based methods and publicly available information. ACOs were defined as either having (1) enrolled in a public ACO program or (2) a signed a letter of agreement or contract with one or more commercial payers that included responsibility for total cost of care and quality for a defined group of patients.

Similar to Wave 1, the second wave of the NSACO was administered by a third-party survey firm via a web-based survey. The respondents typically held executive- or director-level positions within their respective organizations. Respondents were contacted by email, which was followed by telephone and email as needed. In all, 220 organizations were deemed possibly eligible; of these, 32 organizations were found not to be ACOs, 97 eligible organizations completed the survey, 42 eligible organizations did not complete the survey, and the eligibility of 49 organizations was unknown/unable to be confirmed. This resulted in a response rate of 60 percent, using methodology from the American Association for Public Opinion Research (2011), taking into account unknown eligibility in the calculation.

Though the response rate for Wave 2 meets general acceptability criteria (Cull et al. 2005; Johnson and Wislar 2012), we examined the extent to which there was nonresponse bias with regard to beneficiary composition, provider composition, savings distribution, and quality performance in year 1. Across all measures, respondents and nonrespondents were not statistically different (see Appendix SA2).

Measures and Analysis

The specific survey questions included and a general description of measure construction are elaborated in Appendix SA3. Multiple approaches were used to address missing data.[1] A two-step clustering procedure, accounting for both categorical and continuous variables, was used to form clusters. These

cluster solutions were internally validated on randomly split halves. Pairwise comparisons were conducted to understand how the clusters differed along the various organizational attributes included in the clustering procedure. The cluster solutions were then validated using discriminant analysis, to distinguish between cluster solutions (May 1982).

The first part of the cluster analysis includes Wave 2 data only. Wave 2 cluster solutions are compared with the original Wave 1 ACO clusters. The second part of the analysis includes both datasets combined. *PASW version 17.0* (IBM Corp, Somers, NY, USA) was used for the two-step clustering procedure; *STATA 12* (StataCorp, College Station, TX, USA) was used for all other analyses.

RESULTS

Of the 97 organizations in Wave 2, 57 (59 percent) reported having a Medicare contract and 52 (54 percent) reported having a private (or commercial) contract. Nearly half of the responding organizations, 47 (49 percent), reported having more than one ACO contract. The proportions of Medicare, commercial, and multiple payer ACO contracts were not significantly different from Wave 1 early adopters (see Table 1).

Across the eight organizational attributes, the later adopters were similar to the early adopters of the ACO model on most dimensions, including size, scope of services, percent primary care clinicians, institutional leadership, performance management and accountability strategies used, and prior payment reform experience. There were two significant differences between the two waves: the number of participating provider groups was somewhat higher in the later adopters (2.8 vs. 2.5 for the early ACOs); and the percent of ACOs self-reporting as an IDS was also higher in the later adopters (62.9 percent vs. 48.0 percent in the early ACOs). When differences in provider group participation were explored more closely, we found greater involvement of federally qualified health centers (FQHCs) and medical groups in the later adopters.

Wave 2 Clusters

Among the 88 organizations with complete data that were included in the later adopters (Wave 2) sample clustering, there were two dominant forms of ACOs: larger, integrated system ACOs and smaller, physician-led ACOs.[2]

Table 1: Comparison of ACOs between Wave 1 and Wave 2

Measure	*Wave 1*	*Wave 2*
N	173	97
Medicare ACOs, % yes	66.5	58.8
Commercial ACOs, % yes	50.9	53.6
Multiple ACO contracts, % yes	42.8	48.5
Total FTE clinicians, mean	420.9	410.6
Provider group participation (0–5)*, mean	2.5	2.8
Scope of services (0–15), mean	8.8	8.3
Integrated delivery system*, % yes	48.0	62.9
Percent primary care, mean	55.9	57.6
Institutional leadership type		
% Physician-led	51.5	51.6
% Jointly led	33.0	33.0
Performance management/accountability (0–5), mean	2.4	2.3
Payment reform experience (0–5), mean	3.3	3.4

*Significance at the 0.05 level between survey waves.

The characteristics of these two clusters primarily reflect that of the early adopters and are shown in Table 2 (under "Wave 2 Clusters"). For example, the larger, integrated system ACOs reported a mean of 565.3 total FTE clinicians (range 30–2,499), a mean of 3.6 different provider group types participating in the ACO (out of a possible 5), and had a relatively large scope of services included in their contract (11.3 out of a possible 15). Similar to the original taxonomic clusters, the smaller, physician-led ACOs were smaller in size (mean 255.9 total FTE clinicians, range 14–1,800), possessed on average 2.0 of 5 possible different provider groups, and included fewer scope of services in their ACO contract (mean 5.4 out of 15 possible).

There were also notable differences between the early and later adopters. Within the later adopter ACOs, there appeared to be a greater presence of ACOs self-identifying as an IDS. On average, 81.8 percent of the ACOS within the larger, integrated system and 40.9 percent of the smaller, physician-led ACO cluster responded as being part of an IDS. Also, in the Wave 1 the smaller, physician-led ACOs possessed a relatively greater performance management capability compared to their larger counterparts, while the opposite was true in the Wave 2 cluster solution (mean 2.8 for the larger, integrated system ACOs versus 1.9 of 5 for the smaller, physician-led ACOs). This two-cluster solution performed well in terms of the discriminant analysis, with 93 percent of ACOs correctly classified.

Table 2: Summary of Cluster Solutions Using the Two-Step Approach, for Wave 1, Wave 2, and Combined Wave 1 and Wave 2 Data

	Wave 1 Clusters			*Wave 2 Clusters*		*Combined Clusters*		
Measure	*Integrated System*	*Physician-Led*	*Hybrid*	*Integrated System*	*Physician-Led*	*Integrated System*	*Physician-Led*	*Hybrid*
N	65	55	42	44	44	78	113	60
Total FTE clinicians, mean	566.2	180.7	351.3	565.3	255.9	728.2	240.0	346.9
Provider group participation (0–5), mean	3.0	1.4	2.7	3.6	2.0	3.3	1.8	3.2
Scope of services (0–15), mean	11.1	4.6	10.1	11.3	5.4	12.0	5.5	10.0
Integrated delivery system, % yes	93.8	10.9	26.2	81.8	40.9	92.3	25.7	53.3
Percent primary care, mean	42.5	68.8	58.5	40.0	75.1	41.3	69.5	51.7
Institutional leadership type								
% Physician-led	40.0	90.9	21.4	18.2	86.4	38.5	89.4	0.0
% Jointly led	56.9	0.0	38.1	63.6	0.0	56.4	0.0	63.3
Performance management/ accountability (0–5), mean	2.4	3.1	1.8	2.8	1.9	2.6	2.4	2.4
Payment reform experience (0–5), mean	3.9	2.3	3.7	4.2	2.7	4.2	2.6	3.8

Notes. For each group of cluster solutions (Wave 1, Wave 2, and Combined), the eight attributes are significantly different across the clusters at the 0.01 level.
Chi-squared test used for cross-cluster comparisons for integrated delivery system and leadership type, ANOVA for all other variables.

Combined Wave 1 and 2 Clusters

For updating the taxonomy, we used the same two-step clustering methodology using combined Wave 1 (early adopter) and Wave 2 (later adopter) data.

The three-cluster solution results using combined data are shown in Table 2. Of the 251 ACOs that were classified, 78 (31.1 percent) were larger, integrated system ACOs; 113 (45.0 percent) were smaller physician-led ACOs; and 60 (23.9 percent) were hybrid ACOs. As validation, 76.9 percent of the ACOs were re-classified into the same clusters using discriminant analysis.

The larger, integrated system ACOs included substantially larger organizations with a mean of 728.2 FTE clinicians, a mean of 3.3 out of 5 possible different provider group types participating, and a mean of 12.0 (out of 15) services. These larger, integrated system ACOs possess moderate performance management capabilities (mean 2.6 out of 5) and a high degree of prior payment reform experience (mean 4.2 of 5).

The smaller, physician-led ACOs included a mean of 240.0 total FTE clinicians, mean 1.8 of 5 possible provider group types, and mean 5.5 of 15 services included in the scope of the ACO contract. This ACO form possessed moderate performance management capabilities (mean 2.4 of 5) and a small degree of prior payment reform experience (mean 2.6 of 5).

Finally, the hybrid ACOs possessed a mean of 346.9 total FTE clinicians, including a fair number of different provider group types (mean 3.2 of 5) and included 10 of 15 services. Hybrid ACOs possessed some degree of performance management capabilities (2.4 of 5 possible) and an intermediate degree of payment reform experience (mean 3.8 of 5 possible).

As a further check on the validity of the three-cluster solution, we examined their governing board composition, hypothesizing that hybrid ACOs would have a relatively equal share of governing board members between hospital representatives and clinicians, while smaller, physician-led and large, integrated system ACOs would both possess a relatively greater percent of clinicians. This was, in fact, the case with only 46.9 percent of governing board members being clinicians within hybrid ACOs, as compared to 74.0 percent within smaller, physician-led and 60.3 percent within larger, integrated system ACOs.

In sensitivity analysis, we included a hospital variable in addition to the original eight attributes, given recent studies that examine whether ACOs differ across hospital inclusion (Colla et al. 2014; Epstein et al. 2014). We did not find substantial changes to the cluster solution and thus did not include the hospital variable in the final solution.

DISCUSSION

We found two key differences between early and later ACO adopters: a significantly higher number of later adopters included FQHCs or rural health centers as well as medical groups, compared to early ACOs, and a significantly higher percent of later adopter ACOs indicated they are part of an IDS. The apparent development of more recent ACOs becoming a part of more IDSs may be a response to payment reform, particularly in the commercial insurance sector, moving away from fee-for-service payment toward more risk-based payment. As we cannot assess the directionality of the relationship, it may also be that these types of organizations are simply more likely to form ACOs.

We also found that later ACO adopters were best characterized by only two of the original three ACO clusters: larger, integrated system ACOs and smaller, physician-led ACOs. But when both periods of data were combined, we find there are three ACO types consistent with the original taxonomy. Smaller, physician-led ACOs were the most prevalent, with 45 percent of study ACOs classified as such (compared to 34 percent of early adopters). In addition, hybrid ACOs, while they possessed similarities to their larger, integrated system ACO counterparts, were distinct in that they were primarily jointly led between physicians and hospitals, were generally smaller, and did not identify as IDSs. They made up 23.9 percent, which is similar to the proportion of early adopter ACOs—25.9 percent. Finally, the larger, integrated system ACOs compromised approximately one-third of the study ACOs in the combined data, while they were more prevalent among early adopter ACOs, at 40.1 percent. So while the cluster types remain essentially the same, it appears that there is greater presence of smaller, physician-led ACOs.

The study data include the most recent and comprehensive data on ACOs to date. Yet given the continued growth of the ACO model, it is difficult to predict a future trajectory regarding whether one cluster type may dominate over time given institutional pressures or whether the flexibility inherent in the ACO model will allow for additional types of organizations to participate and additional or different clusters to emerge. The decision by CMS to create a Next Generation category of ACOs for those willing to take on more risk in exchange for a higher percentage of savings, while also extending the MSSP model for an additional 3 years with no downside risk, will clearly influence future developments as well.

In addition to continued tracking, there is need for carefully focused qualitative research which can provide further knowledge of the ways in which

the three clusters may differ and examine the heterogeneity within clusters. This may be particularly important given the somewhat mixed early results from the Medicare ACO programs (Centers for Medicare and Medicaid Services 2014b; McWilliams et al. 2015; Nyweide et al. 2015).

Limitations

The findings should be considered within the context of several limitations. The data were collected from a single source survey with a single respondent identified as the individual most knowledgeable about ACO activities. However, due to resource limitations, the responses were not independently validated.

CONCLUSION

While each ACO is unique to some extent, examination of key attributes at two different points in time indicates that there are also common, shared characteristics. These can be used to examine ACO clinical and financial performance; track ACO efforts to better manage patients with high-risk, high-cost medically complex conditions; assess efforts to more actively engage patients and families in their care; target technical assistance activities; inform future payment policies; and provide information to future ACOs of some of the attributes that they may need to develop. While there is some difference between the first wave baseline taxonomy and the updated taxonomy reported here, the three category taxonomy appears to still best describe the current ACO landscape.

Overall, the present findings suggest that greater confidence can be placed in the three category characterization of ACOs and its use by policy makers, providers, payers, and the research community in examining the current and future evolution of ACOs. As more data become available on costs, clinical and patient-reported outcomes, and population health metrics, the taxonomy can be used to compare, guide, and further understand ACO performance.

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Disclaimers: None.

NOTES

1. There were several observations with missing data for the number of specialty FTE within the organization, used to calculate total FTE clinicians and percent primary care clinician measures. For those organizations with missing specialty FTE data that responded "No" to hospital or specialty group inclusion within the ACO, the number of specialty FTE clinicians was assigned a value of "0." For the number of health care services included within or contracted outside of the ACO, the two ACOs for which all question responses were missing were contacted directly for follow-up.
2. Note that the cluster label "larger, integrated system ACO" has been modified from the original "larger, IDS ACO" and is aligned more with the integrated nature of health care services delivered and less the response to the survey question about self-identification as an IDS.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Matrix.

Appendix SA2: Beneficiary Composition, Provider Composition, and Savings Distribution of Medicare ACOs in Performance Year 1: Respondents versus Nonrespondents to the National Survey of Accountable Care Organizations.

Appendix SA3: NSACO Survey Questions Included in Measures.